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Advies Actualisering Beleidsdoelen

Nota Tijd voor Sport

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Het ter inzage geven van het TNO-rapport aan direct belanghebbenden is toegestaan.

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Bijlage(n)

A Verslag Expertmeeting Actualisering Beleidsdoelen VWS

B Achtergrondinformatie behorende bij het advies actualisering beleidsdoelen Nota
Tijd voor Sport

1 Inleiding

1.1 Wat vooraf ging

In 2005 hebben RIVM en TNO het rapport 'Kosteneffectiviteit en gezondheidswinst van behalen beleidsdoelen bewegen en overgewicht – Onderbouwing Nationaal Actieplan Sport en Bewegen' opgesteld.⁽¹⁾ Eén van de punten die in dit rapport werd behandeld was het onderbouwen van een realistisch beleidsdoel voor beweeggedrag. De volgende conclusies werden getrokken:

- Een *realistisch beleidsdoel* voor beweeggedrag in Nederland betreft een daling van het percentage inactieven met één tot twee procentpunten over een periode van vijf jaar. Dit doel is onderbouwd op basis van twee Nederlandse voorbeeldprojecten met vastgestelde langetermijneffecten.
- Een *theoretisch beleidsdoel* voor beweeggedrag in Nederland betreft een stijging van het percentage normactieven met vijf procentpunten over een periode van vijf jaar. Deze uitspraak is gebaseerd op meningen van experts. Er zijn geen Nederlandse of buitenlandse voorbeeldinterventies met eenduidig vastgestelde langetermijneffecten op normactiviteit.

De Nederlandse Norm Gezond Bewegen

* Jongeren (jonger dan 18 jaar)

Dagelijks één uur tenminste matig intensieve lichamelijke activiteit (≥ 5 MET $\dagger$), waarbij de activiteiten minimaal twee maal per week gericht zijn op het verbeteren of handhaven van lichamelijke fitheid (kracht, lenigheid en coördinatie). Matig intensieve activiteit betekent voor jongeren bijvoorbeeld aerobics, skateboarden en hardlopen (8 km/uur).

* Volwassenen (18-55 jaar)

Tenminste een half uur minimaal matig intensieve lichamelijke activiteit (≥ 4 MET) op minimaal 5 dagen per week. Matig intensieve activiteit betekent voor volwassenen bijvoorbeeld stevig wandelen (5 km/uur) en fietsen (16 km/uur).

* 55-plussers

Tenminste een half uur minimaal matig intensieve lichamelijke activiteit (≥ 3 MET) op minimaal 5 dagen per week. Voor niet-actieven, zonder of met beperkingen, is elke extra hoeveelheid lichaamsbeweging zinvol onafhankelijk van intensiteit, duur, frequentie en type activiteit. Matig intensieve activiteit betekent voor 55-plussers bijvoorbeeld wandelen (4 km/uur) en fietsen (10 km/uur).

De fitnorm

- * Gezonde volwassenen zouden tenminste drie keer per week gedurende minimaal 20 minuten zwaar intensief actief moeten zijn.

De combinorm

- * Is een combinatie van beide bovenstaande normen. Iemand voldoet aan de combinorm wanneer hij/zij aan tenminste één van de beide normen voldoet.

De destijds meest recente en beschikbare gegevens over inactiviteit en normactiviteit in Nederland gaven aan dat 47% van de bevolking voldeed aan de Nederlandse Norm

Gezond Bewegen (NNGB), 21% aan de fitnorm en 55% aan de combinorm (oftewel, aan tenminste één van beide andere normen; zie kader). Daarnaast werd geschat dat ongeveer 8% van de Nederlandse bevolking inactief was.⁽¹⁾

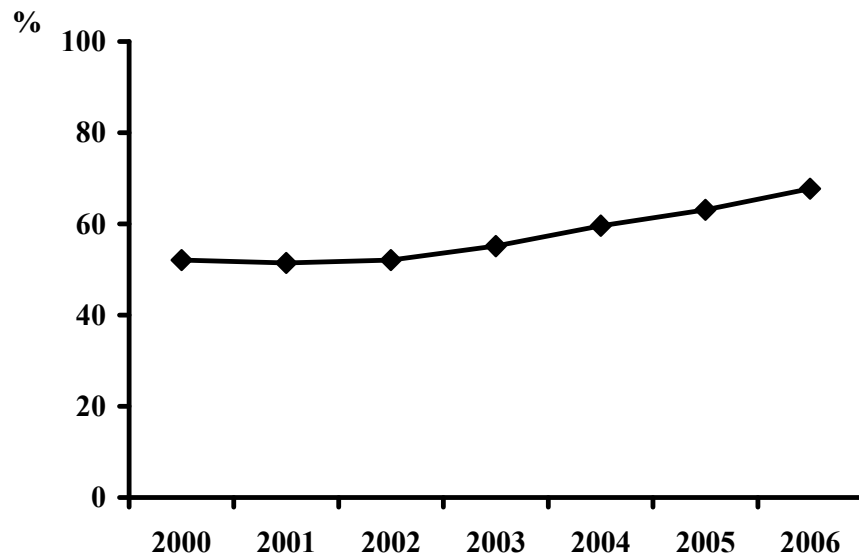
Op basis van deze achtergrondinformatie zijn door VWS in de Nota 'Tijd voor sport. Bewegen, meedoen, presteren' de volgende ambities geformuleerd voor de periode 2005-2010:⁽²⁾

- In 2010 voldoet minstens 65% van de Nederlandse volwassenen aan de beweegnorm¹;
- Het deel van de volwassen bevolking dat gemiddeld geen enkele dag per week voldoende beweegt is in 2010 teruggedrongen van 8% naar 7%.

Dit betekent dat het realistische en wetenschappelijk onderbouwde beleidsdoel door VWS in de nota één op één is overgenomen met betrekking tot 'inactiviteit' (daalt van 8% naar 7%). Het theoretisch haalbare beleidsdoel (niet wetenschappelijk onderbouwd, maar gebaseerd op de mening van experts) is toegepast met betrekking tot (combi)normactiviteit. Daarbij is VWS uitgegaan van het cijfer over 2004 (59,6%), dat kort voor het verschijnen van de nota bekend werd. Daardoor ontstond er een (schijnbare) verdubbeling van de ambitie ten opzichte van het onderbouwende rapport dat nog uitging van eerdere cijfers

1.2 Waarom nu al een actualisering?

Sinds 2000 gebruikt de Directie Sport van VWS het 'Ongevallen en Bewegen in Nederland (OBiN)-onderzoek om onder meer het percentage Nederlanders te monitoren dat voldoet aan de combinorm (zie kader). Figuur 1 geeft het percentage volwassen Nederlanders dat voldoet aan de combinorm over de periode 2000 t/m 2006 geschat met behulp van de OBiN-gegevens.



Figuur 1. Verloop in het percentage volwassen Nederlanders dat voldoet aan de combinorm (OBiN 2000 t/m 2006).⁽³⁾

¹ NB. Met de beweegnorm wordt hier de combinorm (zie kader) bedoeld.

Ten tijde van de onderbouwing van het Nationaal Actieplan Sport en Bewegen waren de OBiN-gegevens bekend tot en met 2003. In de periode 2000 t/m 2002 was het percentage combinormactieven redelijk stabiel (51-52%). In 2003 leek een stijging te worden ingezet (55,1%). Nu ook de OBiN-schattingen uit 2004 t/m 2006 bekend zijn, blijkt het percentage combinormactieven nog verder te zijn gestegen.⁽³⁾ Zover zelfs, dat de ambitie van VWS ('In 2010 voldoet minstens 65% van de Nederlandse volwassenen aan de beweegnorm'²) al voortijdig lijkt te zijn gehaald. Hetzelfde geldt voor het percentage inactieven³ welke op basis van de OBiN-gegevens blijkt te zijn gedaald van 8% in 2003 naar 5% in 2006.⁽³⁾

Deze recente ontwikkelingen hebben bij VWS geleid tot de vraag of de gestelde ambities dienen te worden bijgesteld en zo ja in welke mate.

1.3 Vraagstelling

In dit advies wordt antwoord gegeven op de volgende onderzoeksvragen:

- Wat is de meest recente stand van zaken betreffende het beweeggedrag van de Nederlandse bevolking in termen van inactiviteit en de verschillende beweegnormen?
- Is het op basis van de meest recente informatie over bewegen van de Nederlandse bevolking noodzakelijk/wenselijk om de ambities van 7% inactieven en 65% combinormactieven voor 2010 bij te stellen?

En zo ja,

- Is het haalbaar een percentage van 70% combinormactieven als streefcijfer op te nemen voor 2011?
- Is het haalbaar de tijdshorizon van de gestelde doelen te verschuiven naar 2015?

² NB. Met de beweegnorm wordt hier de combinorm (zie kader) bedoeld.

³ Inactiviteit wordt hier gedefinieerd als '0 keer per week' voldoen aan de NNGB.

2 Tot stand komen en opbouw van het advies

Om op korte termijn een antwoord te kunnen geven op de vraag van VWS of het op basis van de meest recente informatie over bewegen in Nederland noodzakelijk/wenselijk zou zijn om de ambities voor 2010 uit de Nota Tijd voor Sport bij te stellen, is een expertmeeting georganiseerd.

In deze meeting is een korte samenvatting gegeven van het tot stand komen van de onderbouwing van het Nationaal Actieplan Sport en Bewegen in 2005 op basis van het hierover verschenen RIVM-rapport.⁽¹⁾ Tevens zijn de ambities aangaande beweeggedrag uit de Nota Tijd voor Sport aan de orde geweest.⁽²⁾ Om een onderbouwde discussie te kunnen voeren, zijn de ontwikkelingen in de beweegnormen besproken.

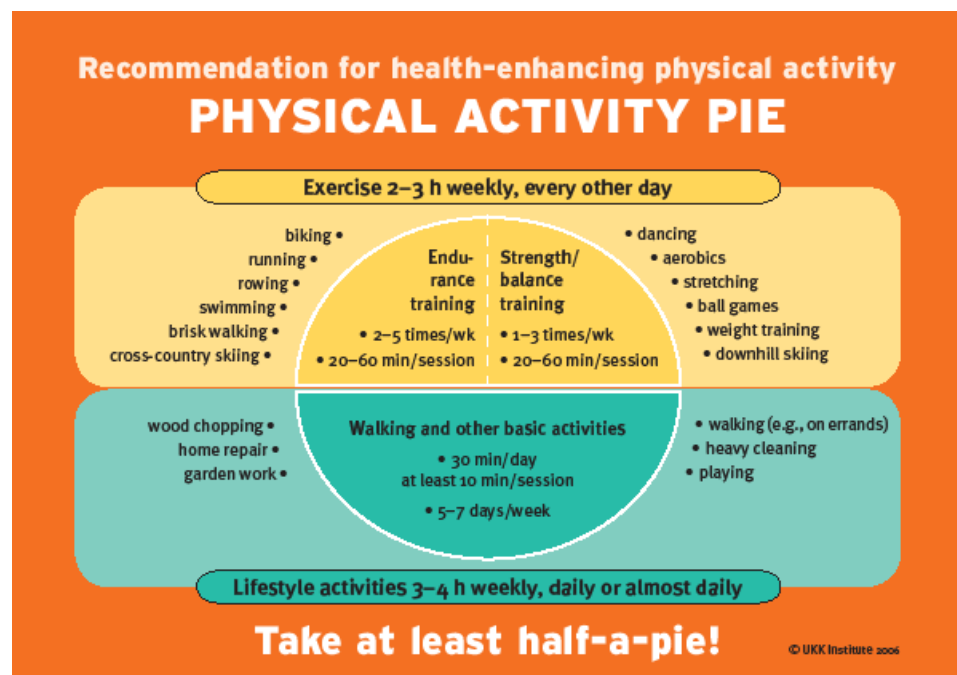
Hoofdstuk 3 van dit advies bevat een samenvatting van de ontwikkelingen in de beweegnormen, zoals gepresenteerd tijdens de expertmeeting. In hoofdstuk 4 wordt het antwoord op de onderzoeksvraag (het advies) gegeven.

Bijlage A bevat het verslag van de expertmeeting. Daarnaast zijn de documenten die ten grondslag hebben gelegen aan het advies bijgevoegd in Bijlage B.

3 Ontwikkelingen beweegnormen; verschillende bronnen vergeleken

3.1 Van beweegnorm naar combinorm

Zoals in de inleiding al werd vermeld, gaat VWS in de Nota Tijd voor Sport met de ambitie van 65% normactieven in 2010 uit van de combinorm in plaats van de Nederlandse Norm Gezond Bewegen. Ook internationaal is een dergelijke verschuiving van beweegnorm naar combinorm waar te nemen. Tegenwoordig adviseren ook de 'American Colleges of Sports Medicine' (www.acsm.org) en de 'American Heart Association' (www.americanheart.org) een combinatie van matig en zwaar intensieve activiteiten.^(4,5) Een ander voorbeeld is de 'physical activity pie' die werd ontwikkeld in Finland en ondertussen ook wordt gebruikt in Zweden (Figuur 2).⁽⁶⁾



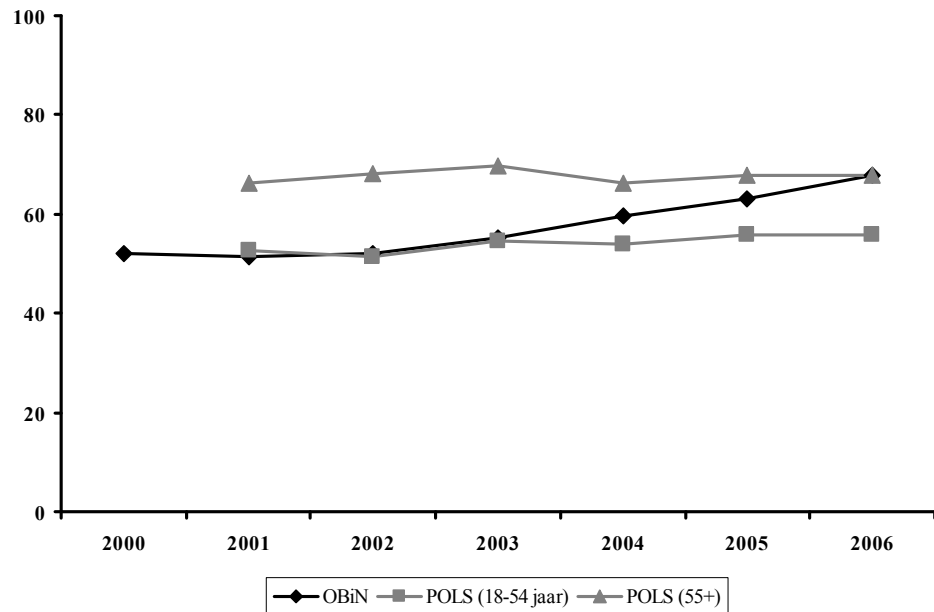
Figuur 2. Physical activity pie.⁽⁶⁾

Op basis van bovenstaande mag worden geconcludeerd dat er inmiddels breed internationaal draagvlak bestaat voor het gebruik van de combinorm naast en/of in de plaats van de beweegnorm.

3.2 Combinormactiviteit: verschillende bronnen naast elkaar

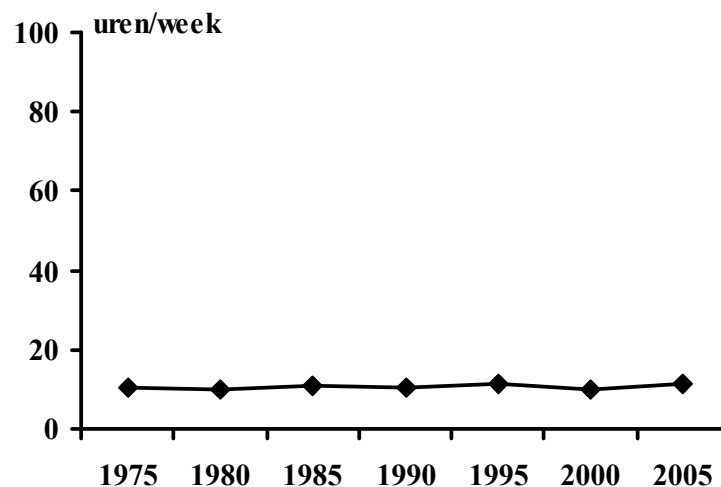
De OBiN-cijfers laten een duidelijke stijging zien over de periode 2000-2006 in het percentage volwassenen dat aan de combinorm voldoet (Figuur 1).⁽³⁾ Een andere belangrijke bron voor het schatten van combinormactiviteit is de CBS-POLS enquête.

Figuur 3 laat het verloop in combinormactiviteit zien voor zowel de OBiN als de CBS-POLS⁴ gegevens.^(3;7)



Figuur 3 Verloop in het percentage volwassen Nederlanders dat voldoet aan de combinorm (OBiN en CBS-POLS 2000 t/m 2006).^(3;7)

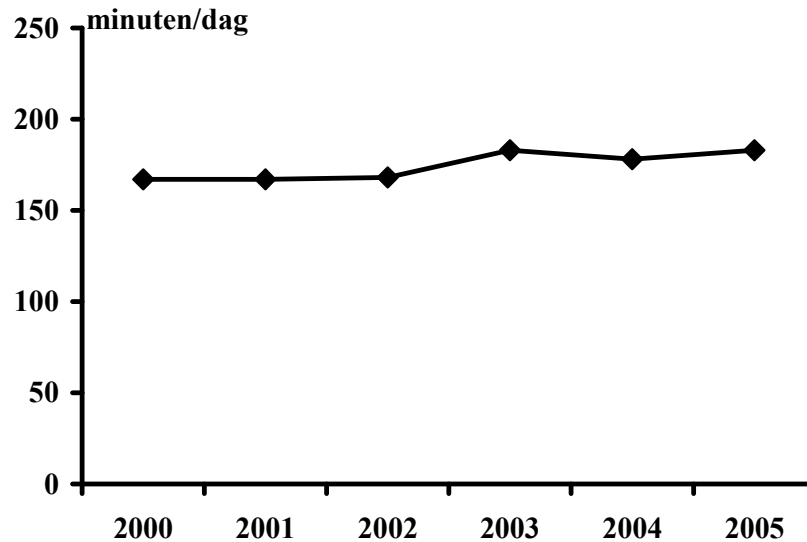
De duidelijke stijging die wordt waargenomen op basis van de OBiN-gegevens is niet te zien wanneer we kijken naar de gegevens uit de CBS-POLS enquête. De CBS-POLS-gegevens laten zien dat het percentage volwassenen dat in Nederland aan de combinorm voldoet zowel voor 18-54 jarigen als voor 55-plussers min of meer constant blijft.



Figuur 4 Aantal uren per week besteed aan activiteiten die bijdragen aan het behalen van de combinorm (bevolking 12 jaar en ouder, TBO/SCP).⁽⁸⁾

⁴ NB In de CBS-POLS enquête wordt sinds 2001 een andere vragenlijst gebruikt om beweeggedrag te meten. Gegevens over 2000 zijn daarom buiten beschouwing gelaten.

Een interessante aanvulling op deze bronnen vormt het tijdsbestedingsonderzoek (TBO) van het Sociaal Cultureel Planbureau (SCP). Dit onderzoek loopt sinds 1975 en wordt elke vijf jaar herhaald. Figuur 4 laat de ontwikkelingen zien voor de bevolking van twaalf jaar en ouder in het aantal uren per week dat wordt besteed aan activiteiten⁵ die bijdragen aan het behalen van de combinorm.⁽⁸⁾ Hier zien we een stijging in lichaamsbeweging van 9,9 uur per week in 2000 naar 11,5 uur per week in 2005. Op de langere termijn (vanaf 1975) is echter geen sprake van een duidelijke trend in de hoeveelheid lichaamsbeweging van de Nederlandse bevolking.



Figuur 5 Aantal minuten per dag besteed aan lichamelijke activiteit (bevolking 18 jaar en ouder, OBiN).⁽⁹⁾

Het onderdeel van de OBiN-vragenlijst waarop figuur 1 is gebaseerd, is niet de enige bron van informatie over beweeggedrag in deze vragenlijst. Binnen het OBiN-onderzoek worden ook gegevens verzameld over het beweegpatroon van Nederlanders in termen van minuten per dag. Figuur 5 geeft het verloop hierin weer over de periode 2000-2005.⁽⁹⁾ Ook op basis van dit figuur moeten we concluderen dat de sterke stijging uit figuur 1 niet wordt waargenomen. De stijging in de periode 2002 – 2003 (+15 minuten/dag totale lichamelijke activiteit; figuur 5), lijkt een eenmalige stijging die zich niet doorzet, aangezien het aantal minuten/dag totale lichamelijke activiteit in de periode 2003 - 2005 weer redelijk constant bleef. Bovendien werd het overgrote deel (11 van de 15 minuten) van deze stijging veroorzaakt door een stijging in het aantal minuten activiteit tijdens werk en/of school en het aantal minuten huishoudelijk werk. Dit betekent dat de stijging van 15 minuten/dag waarschijnlijk, vanwege de verdeling over de verschillende categorieën/domeinen van activiteit en de daarbij behorende gemiddelde intensiteit, niet voldoende is om de stijging in procentpunten combinormactiviteit (stijging van drie procentpunten; figuur 1) in de periode 2002 – 2003 te verklaren.

⁵ Activiteiten die hier werden meegenomen zijn: sport, recreatie en spel (wandelen, fietsen, buiten spelen (kinderen) en wandelen/fietsen met kinderen), verplaatsingen per voet/fiets en huishoudelijk werk (inclusief klussen en tuinieren). Alle activiteiten hadden een MET-waarde van 3,0 of hoger.

Wanneer deze bronnen naast elkaar worden bekeken, rijst de vraag wat mogelijke verklaringen zijn voor het verschil in schatting tussen de verschillende methoden. Een belangrijke oorzaak moet uiteraard worden gezocht in het simpele feit dat verschillende methoden nu eenmaal verschillende schattingen tot gevolg hebben. Desalniettemin is de verwachting dat wanneer het beweeggedrag in Nederland daadwerkelijk en wezenlijk verandert over de tijd, al deze methoden dit in meer of mindere mate zullen oppikken. De vraag is dus eigenlijk: wat wordt er in de OBiN-vraagstelling over de beweegnormen (zie kader) *wel* opgepikt wat met de andere meetmethoden *niet* tot uitdrukking komt?

OBiN-vraagstelling NNGB

Ik stel u nu twee vragen over lichaamsbeweging, zoals bijvoorbeeld wandelen of fietsen, tuinieren, sporten of beweging op het werk of op school. Het gaat om alle lichaamsbeweging die tenminste even inspannend is als stevig doorlopen of fietsen.

- * Hoeveel dagen per week beoefent u in de ZOMER tenminste 30 minuten per dag zulke lichaamsbeweging? Het gaat om het gemiddeld aantal dagen van een gewone week.
- * En hoeveel dagen per week beoefent u in de WINTER tenminste 30 minuten per dag zulke lichaamsbeweging? Het gaat weer om het gemiddeld aantal dagen van een gewone week

OBiN-vraagstelling Fitnorm

Dan stel ik u nu twee vragen over inspannende lichaamsbeweging in uw VRIJE TIJD

- * Hoe vaak per week beoefent u in uw vrije tijd, in de ZOMER inspannende sporten of zware lichamelijke activiteiten die lang genoeg duren om bezweet te raken. Het gaat om inspannende lichaamsbeweging in uw vrije tijd die tenminste 20 minuten per keer duurt.
- * En hoe vaak per week beoefent u in uw vrije tijd, in de WINTER inspannende sporten of zware lichamelijke activiteiten die lang genoeg duren om bezweet te raken. Het gaat om inspannende lichaamsbeweging in uw vrije tijd die tenminste 20 minuten per keer duurt.

Een opvallend verschil tussen de OBiN-vraagstelling aangaande de beweegnormen en de overige methoden die in deze paragraaf werden besproken is dat dit de enige vraagstelling is die direct vraagt 'Hoeveel dagen in de week voldoet u aan de norm'. Hiermee is deze vraagstelling automatisch heel direct te beïnvloeden door bekendheid van de beweegnormen bij de algemene bevolking. Een plausibel antwoord op de vraag wat deze vraagstelling *wel* lijkt op te pikken en andere *niet* is dus ook 'de bekendheid van de norm'. Deze notie werd ook breed gedragen tijdens de expertmeeting (Bijlage A). Dit betekent niet dat de OBiN-vraagstelling over de beweegnormen niet kan worden gebruikt als monitorinstrument. Het betekent wel dat deze vraagstelling niet zondermeer als *enig* monitorinstrument kan worden gebruikt. In lijn hiermee is de conclusie van de expertmeeting (Bijlage A) dat bij het monitoren van beweeggedrag in Nederland niet langer kan worden volstaan met de OBiN-vraagstelling aangaande de beweegnormen. De overige beweegvragen uit het OBiN-onderzoek lijken (gezien de mogelijke gevoeligheid van de normvragen voor bekendheid met de beweegnormen) een beter uitgangspunt. Daarnaast kunnen de CBS/POLS-gegevens en het tijdsbestedingsonderzoek van het SCP worden gezien als goede bronnen om vanuit een bredere blik conclusies te trekken over het beweeggedrag in Nederland.

Een ander belangrijk punt wat uit de expertmeeting naar voren kwam was de betekenis van de conclusie dat de OBiN-vraagstelling blijkbaar een toenemende bekendheid van

de norm waarneemt. Dit impliceert namelijk dat de inspanningen rondom de FLASH-campagne (www.30minutenbewegen.nl) wel degelijk hun vruchten afwerpen.

4 Advies

4.1 Advies bijstelling ambities

Een specifieke vraag van VWS was of het haalbaar zou zijn een percentage van 70% combinormactieven als streefcijfer op te nemen voor 2011. Uitgaande van de OBiN-cijfers lijkt dit een realistische en haalbare politieke ambitie. Immers, in 2006 gaf de OBiN-enquête al een schatting van bijna 68% combinormactieven. Het is echter aan te raden om naast de OBiN-enquête als graadmeter, conclusies aangaande het beweeggedrag in Nederland te baseren op een breder scala aan bronnen zoals ook al in paragraaf 3.2 van dit advies werd vastgesteld.

De oorspronkelijke onderbouwing van de ambities voor het Nationaal Actieplan Sport en Bewegen steunde op tal van bronnen variërend van monitoringcijfers over beweeggedrag, tot bewezen effecten van interventies, simulaties met een computermodel en de mening van experts.⁽¹⁾ Wanneer we nu opnieuw de verschillende bronnen voor het meten van beweeggedrag in Nederland naast elkaar zetten, dan blijken zich daarbij tegenstrijdigheden voor te doen. Uit een aantal bronnen blijkt dat er geen directe aanleiding is om aan te nemen dat Nederlanders de afgelopen jaren daadwerkelijk meer zijn gaan bewegen (zie paragraaf 3.2 van dit advies). Het is dus vanuit wetenschappelijk standpunt niet noodzakelijk om de ambities uit de Nota Tijd voor Sport bij te stellen.

Daarnaast wilde VWS weten of het haalbaar zou zijn de tijdshorizon van de gestelde doelen te verschuiven naar 2015. Een dergelijke uitspraak is echter niet te onderbouwen.

4.2 Advies doelgroepsspecifieke beleidsdoelen

Voor het onderbouwen van de beleidsdoelen in de nota Tijd voor Sport is o.a. uitgebreid literatuuronderzoek gedaan naar de effecten van verschillende typen interventies en maatregelen op het gebied van bewegen. Hierbij is echter geen rekening gehouden met effecten die binnen specifieke doelgroepen al dan niet zijn aangetoond. Het staat echter vast dat aanbevelingen voor de algemene bevolking niet zondermeer kunnen worden overgenomen voor specifieke doelgroepen. Het verdient dan ook aanbeveling soortgelijke trajecten als die ten grondslag liggen aan de onderbouwing van de beleidsdoelen in de nota Tijd voor Sport in te slaan voor het onderbouwen van doelgroepsspecifieke beleidsdoelen. Doelgroepen die hierbij in ieder geval moeten worden meegenomen zijn de jeugd, de werkende bevolking, chronisch zieken en ouderen.

4.3 Aanvullende adviezen

Investeren in betrouwbare en valide instrumenten

Bij de ontwikkeling van zowel de OBiN vragen, de SQUASH vragen en TBO is de nodige aandacht besteed aan de validiteit en betrouwbaarheid van de vragen en methode. Verschillende vragen en verschillende methoden van dataverzameling (telefonisch, mondeling, schriftelijk, internet) leveren verschillende uitkomsten op.

Deze verschillen belemmeren het formuleren van heldere beleidsdoelen en de evaluatie daarvan.

Een extra probleem daarbij is dat validiteits- en betrouwbaarheidsonderzoek veelal is gericht op de algemene bevolking. Verschillen tussen resultaten met diverse methoden kunnen per doelgroep nog sterker verschillen dan de verschillen die worden aangetroffen in de algemene bevolking.

In de komende jaren dient daarom geïnvesteerd te worden in het verkrijgen van inzicht in de relatieve validiteit van de verschillende vragenlijsten onderling en de ontwikkeling van valide en betrouwbare onderzoeksinstrumenten en methoden voor de te onderscheiden doelgroepen. Relevante doelgroepen zijn: jeugd (basisschool, voortgezet onderwijs), ouderen, lage SES, mensen met zittend beroep, mensen met een langdurige aandoening en mensen die niet aan sport doen. Speciale aandacht dient daarnaast te worden besteed aan allochtonen (met name niet westerse allochtonen) die momenteel veelal niet of in zeer geringe mate worden bereikt.

Actualiseren discussie beweegnormen

De eerste expert meeting over beweegnormen heeft plaatsgevonden in 1998. Dit heeft geresulteerd in een breed gedragen advies over de hoeveelheid lichaamsbeweging die vanuit gezondheidsoogpunt wenselijk is. Dit is geoperationaliseerd in de NNGB, de Fitnorm en de Combinorm.⁽¹⁰⁾ In 2003 heeft een tweede expert meeting plaatsgevonden waarbij is gediscussieerd over de houdbaarheid van de NNGB, de wijze waarop de informatie adequaat kan worden gecommuniceerd en eventuele specificatie van de normen voor doelgroepen. In de afgelopen vijf jaar is informatie beschikbaar gekomen over onder meer de dosis-respons relatie tussen bewegen en gezondheid hetgeen feitelijk heeft geresulteerd in een integratie van de NNGB en de Fitnorm. In de nota Tijd voor Sport is daarop tijdig ingespeeld door als criterium voor voldoende bewegen uit te gaan van de Combinorm.

Deze ontwikkelingen gevoegd bij de discussie over vormen van bewegen ter bevordering (onderhouden) van kracht maakt het wenselijk om in 2008 een derde expert meeting te organiseren ter actualisering van de kennis over bewegen in het algemeen en van doelgroepen in het bijzonder. Indien in Europees verband richtlijnen worden ontwikkeld voor bewegen, dan kunnen de Nederlandse resultaten daarmee worden gecombineerd. Overigens is het daarbij waarschijnlijk dat de specifieke Nederlandse situatie (met name fietsland) een landelijk inkleuring van Europese richtlijnen noodzakelijk maakt.

Alternatieve kwantitatieve doelen

In aanvulling op de beweegnorm cijfers dient te worden gewerkt aan de ontwikkeling van andere kengetallen die inzicht geven in de hoeveelheid lichaamsbeweging van de Nederlandse bevolking.

Mogelijke invullingen betreffen de volgende onderwerpen:

- Physical Activity Level (PAL), een maat voor de hoeveelheid lichaamsbeweging. De PAL waarde is de factor waarmee de basaalstofwisseling moet worden vermenigvuldigd om het totale energieverbruik per dag te berekenen (de gemiddelde MET waarde per 24 uur).
- De ontwikkeling van vragen voor het verkrijgen van inzicht in de hoeveelheid sedentair gedrag. Veel vragen zijn momenteel gericht op het verkrijgen van inzicht in gezond geacht beweeggedrag (voor volwassenen tot 55 jaar een MET waarde van 4 of hoger). De tegenhanger daarvan, sedentair gedrag (MET-waarde van rond de 1), blijft veelal buiten beeld. De ontwikkeling van valide en betrouwbare vragen

voor het meten van sedentair gedrag is met name interessant in relatie tot de sterk toenemende percentage mensen met overgewicht in Nederland.

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A Verslag Expertmeeting Actualisering Beleidsdoelen VWS

30 augustus 2007

Aanwezig:

Jantine Schuit (RIVM, Bilthoven)
Mireille van Poppel (VU/EMGO, Amsterdam)
Koen Breedveld (Mulier Instituut, Den Bosch)
Maarten Koornneef (Ministerie van VWS, Den Haag)
Jaap de Graaf (NISB, Bennekom)
Vincent Hildebrandt (TNO KvL, Leiden)
Marijke Hopman-Rock (TNO KvL, Leiden)
Tinus Jongert (TNO KvL, Leiden)
Marielle Jans (TNO KvL, Leiden)
Wil Ooijendijk (TNO KvL, Leiden)
Wanda Wendel-Vos (RIVM, Bilthoven)
Ingrid Bakker (TNO KvL, Leiden)
Astrid Chorus (TNO KvL, Leiden)

Opening: 14.00 uur (Wil Ooijendijk)

Presentaties Wil Ooijendijk en Wanda Wendel-Vos m.b.t. een actualisering van het Nationale Actieplan Sport en Bewegen (haalbaarheid en huidige ontwikkelingen, w.o. Hartslag Limburg/ SLIM)

Discussie:

De discussie begon met de vraag of de cijfers het werkelijke beweeggedrag weerspiegelen (Jaap de Graaf). Koen Breedveld gaf aan dat er sprake zou kunnen zijn van sociaal wenselijke antwoorden. Heeft er een verandering in de vraagstelling plaatsgevonden? Wil Ooijendijk geeft aan dat er vanaf 2005 niet meer is gewerkt met random digit dialing, maar dat er vanaf dat moment gebruik is gemaakt van een panel (een deel wordt via internet en een deel wordt via een telefonisch interview ondervraagd).

Wanda Wendel-Vos vraagt zich af of de fitnorm voor volwassenen direct toepasbaar is op de jeugd. Tinus Jongert gaf aan dat op basis van inspanningsfysiologische argumenten geen reden was om de fitnorm voor jeugd anders te normeren.

De discussie ging verder in op het ogenschijnlijke verschil tussen de cijfers uit OBiN die een stijgende trend laten zien in normactieven en de cijfers over normactieven afgeleid van de SQUASH (geen stijgende trend).

Zowel OBiN als het TBO (TijdsBestedingsOnderzoek, CBS) laten een stijgende lijn zien in het aantal minuten dat de Nederlander gemiddeld lichamelijk actief is op een dag. Deze toename komt doordat Nederlanders aangeven meer te fietsen te wandelen en/of vrijetijdsbestedingen.

De vraag is:

- 1) of het verantwoord is op de doelstellingen van VWS bij te stellen en te verhogen naar 70% i.p.v. 65% in 2011 (hetgeen op basis van OBiN nu (2006) al lijkt te zijn behaald).
- 2) Op welke doelgroepen de inspanningen gericht zouden moeten worden.

Vanuit het NISB (Jaap de Graaf):

Aan de ene kant is hij voor bijstelling van de ambities omdat de campagne '30 minuten bewegen' gebaseerd is op de OBiN en nu niet goed kan verkopen naar zijn financier (ZonMw) waarom campagne voeren nog relevant is (verantwoording van de campagne). Aan de andere kant heeft hij wel bedenkingen bij de verschillende uitkomsten en dus vraagt hij zich af hoe valide de methodes zijn. Is het niet slim om die methodes eens tegen het licht te houden? Daarnaast geeft hij aan dat de inspanningen zich vooral zouden moeten richten op de jeugd.

Vanuit het EMGO (Mireille van Poppel):

Vraagt zich af of het wel/niet behalen van de doelstelling alleen aan de hand van de OBiN cijfers bepaald zou moeten worden. Zo zou o.b.v. de POLS data (SQUASH) 70% niet haalbaar zijn.

Vanuit het RIVM (Jantine Schuit):

Pleit ervoor om bij het formuleren van het beweegbeleid meerdere databronnen in beschouwing te nemen, en gezien de SQUASH-cijfers (duiden op stabiliteit) is zij niet voor bijstelling van de doelstelling van VWS. Zij denkt dat OBiN te gevoelig is voor sociaal-wenselijke antwoorden.

Vanuit TNO (Vincent Hildebrandt):

Wellicht kiezen voor een 2 sporenbeleid, d.w.z. de stijgende lijn in OBiN proberen te handhaven en een stijging in de SQUASH proberen te krijgen.

Vanuit VWS (Maarten Koornneef):

De discussie geeft voer voor een advies waarin benadrukt wordt dat validering van de instrumenten erg belangrijk is om het feitelijke beweeggedrag van de Nederlandse bevolking te meten, aangezien er geen gouden standaard is.

Hij geeft aan dat OBiN geen goede afspiegeling lijkt te zijn van de realiteit en meer gehanteerd dient te worden als een soort van AEX-index: het meet een aspect van de werkelijkheid en van de sociale wenselijkheid (Jantine Schuit geeft als reactie dat de lijnen van POLS (SQUASH vragenlijst) en de OBiN over het algemeen wel heel mooi overeen komen en dat dit toch ook wel weer iets zegt over dat beide methoden bij benadering hetzelfde lijken te meten). Graag zou hij meer inzicht willen hebben in de mate waarin sociale wenselijkheid wel/niet een rol speelt in de cijfers. Het ontwikkelen van een valide instrument zou een advies kunnen zijn. Daarnaast geeft hij aan dat in het advies aangegeven kan worden dat de combinorm een goede norm is, zoals ook gezien wordt bij de huidige ontwikkelingen vanuit de VS. Tevens geeft hij aan dat ook de EU minister behoefte zal hebben aan een advies m.b.t. de guidelines.

Vraag 2) Vervolgens wordt nader ingegaan in de discussie of het beleid zich meer zou moeten richten op risicogroepen, met name de jeugd, maar ook andere doelgroepen als chronisch zieken, werknemers met een zittend beroep, lage SES-groepen.

Vanuit NISB (Jaap de Graaf):

De campagne van het NISB richt zich ook al op doelgroepen, dus dat sluit mooi aan. Maar de vraag is wat een reële kwantitatieve doelstelling is voor deze groepen.

Vanuit TNO (Wil Ooijendijk):

Hij doet uiteindelijk de suggestie om het cijfer van 65% zoals geformuleerd in de nota 'Tijd voor Sport' te laten voor wat het is, en te concentreren op doelgroepen die achterblijven (met name jeugd) en dan met name het terugdringen van de inactiviteit. Aan de andere kant wil het ministerie het aantal kengetallen dat naar de 2^e Kamer gaat beperken.

Extra) Vervolgens ontstaat er een discussie over wat de definitie is van inactiviteit, en dat dit niet gelijk is aan sedentair gedrag.

Naar aanleiding hiervan wordt er door alle aanwezigen positief gereageerd op het voorstel om in 2008 een nieuwe consensusbijeenkomst te houden met de kennisinstituten om de norm nog een keer tegen het licht houden, waaronder de fitnorm voor de jeugd. Ook de waarde van de norm voor verschillende doelgroepen.

Vanuit het NISB wordt daarbij de wens uitgesproken om rekening te houden met de communicatie naar het publiek en daarom geen twee normen te hanteren.

VWS is voorstander van het stellen van kwantitatieve doelen, maar wil graag ook in het advies verwerkt zien in welke mate OBiN een graadmeter is (geworden) voor *bewustwording* van de Nederlandse bevolking met betrekking tot bewegen. Daarnaast zou in het advies moeten worden opgenomen dat het goed is dat meetinstrumenten om het beweeggedrag te meten goed gevalideerd worden. Hetgeen wellicht een bodem legt voor het ontwikkelen van nieuwe monitor instrument(en). Hierbij moet ook de jeugd en inactiviteit als aparte thema's in beschouwing genomen worden. Hij kan zich erin vinden als de inspanningen zich zouden richten op achterblijvende groepen.

Bijstelling van de doelstellingen gelden voor de periode dat het kabinet zitting heeft, met perspectief naar de toekomst (2015).

Wil Ooijendijk geeft nog aan dat er voor de jeugd geen doelstelling kan worden geformuleerd over het percentage jongeren dat aan de combinorm zou moeten voldoen, aangezien realistische doelen op dit moment niet met gegevens te onderbouwen zijn (gegevens zijn niet voorhanden).

Het concept-advies zal binnen 2 weken worden opgesteld.

B Achtergrondinformatie behorende bij het advies actualisering beleidsdoelen Nota Tijd voor Sport

In bijlage B zijn de volgende documenten opgenomen die nadere informatie verschaffen met betrekking tot het bewegen in Nederland, betrouwbaarheid van beweegvragen en internationale ontwikkelingen over de beweegnormen (guidelines).

- a. factsheets over het bewegen in Nederland door de algemene bevolking en de doelgroepen jeugd en chronisch zieken.
 - B.1. Bewegen in Nederland 2000-2006 (OBiN), Astrid Chorus, Wil Ooijendijk, Leiden, 28 augustus 2007
 - B.2. Het beweeggedrag in Nederland, 2001-2006, Wanda Wendel-Vos, Frans Frenken, Jantine Schuit, Trendrapport Bewegen en Gezondheid 2004/2005, Leiden 2007.
 - B.3. Fysieke activiteit van volwassen Nederlanders met chronische Aandoeningen, Astrid Chorus, Kerstin van Overbeek, Tinus Jongert, Marijke Hopman-Rock, Leiden
 - B.4. Factsheet Jeugd, S.I. de Vries, I. Bakker, Leiden
- b. Rapport over de betrouwbaarheid van OBiN en SQUASH vraagstelling
 - B.5. Reliability and agreement of two Dutch questionnaires on physical activity: the SQUASH and OBiN, Marieke M. ter Wee and Astrid Chorus, TNO Quality of Life, Leiden
- c. recente ontwikkelingen over de richtlijnen voor lichamelijke activiteit
 - B.6. ACSM 2007 Physical Activity Guideline information
 - www.americanheart.org
 - B.7. ACSM Physical Activity Guidelines from website
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 - B.8. Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association, William L. Haskell, I-Min Lee, et al., Medicine & Science in Sports & Exercise, 2007, 1423-1434
 - B.9. Physical Activity and Public Health in Older Adults: Recommendation from the American College of Sports Medicine and the American Heart Association, Miriam E. Nelson, W. Jack Rejeski et al. Medicine & Science in Sports & Exercise, 2007, 1435-1445

B.1 Factsheet Bewegen in Nederland 2000-2006

Bewegen in Nederland 2000-2006 (OBiN)

**Astrid Chorus
Wil Ooijendijk**

Leiden, 28 augustus 2007

Hoeveel bewegen Nederlanders?

Inleiding

Deze factsheet is opgesteld ten behoeve van een discussie of en in welke mate een actualisering van de gestelde doelen in de nota Tijd voor Sport (VWS 2005) over het percentage Nederlanders dat inactief is en dat aan de beweegnorm voldoet in 2010 haalbaar is. In kort bestek worden de meest recente gegevens over het bewegen in Nederland weergegeven. Hierbij is gebruik gemaakt van informatie die verkregen is via telefonische interviews.

Volwassenen

Tabel 1 Percentage inactieve volwassen Nederlanders (18+) en percentage dat aan de beweegnormen voldoet, 2000-2006 (gebaseerd op telefonische interviews)				
Jaar	Inactief	NNGB	Fitnorm	Combinorm
2000	9,2	44,2	18,8	52,1
2001	8,7	43,6	19,4	51,4
2002	8,9	44,1	20,1	52,1
2003	8,5	47,4	21,1	55,1
2004	8,2	50,7	23,9	59,6
2005	5,8	56,1	22,4	63,1
2006	5,3	62,6	19,3	67,7
Inactief: niet voldoende actief (minimaal 30 minuten) op geen enkele dag in zomer en winter				

- Het percentage volwassen Nederlanders, dat inactief is, loopt de laatste jaren terug van 9% naar 5%.
- Het percentage volwassen Nederlanders dat aan de NNGB voldoet, stijgt vanaf 2002 naar 62% in 2006.
- Het percentage volwassen Nederlanders dat aan de fitnorm voldoet, is vanaf 2005 dalende.
- Het percentage Nederlanders dat aan de combinorm voldoet en dus voldoende lichaamsbeweging heeft, stijgt vanaf 2002 van 52% naar bijna 68% in 2006.

Bewegen door specifieke groepen

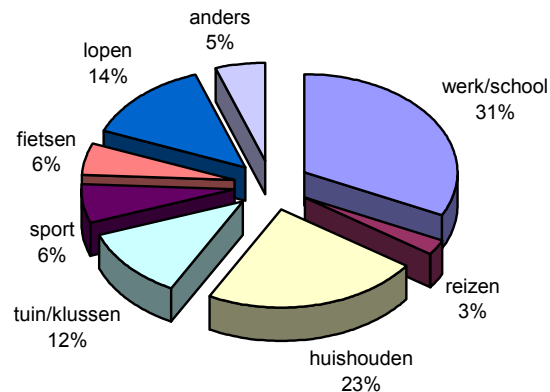
Tabel 2 Percentage inactieve volwassen Nederlanders (18+) en percentage dat aan de onderscheiden normen voldoet (2006) naar achtergrondkenmerken					
		Inactief	NNGB	Fitnorm	Combinorm
Totaal		5,3	62,6	19,3	67,7
Geslacht	Man	4,3	63,8	22,7	69,8
	Vrouw	6,0	61,8	17,0	66,4
Leeftijd	18-34	3,0	68,9	24,8	74,7
	35-54	3,7	62,8	20,1	67,7
	55-64	3,6	62,5	19,5	69,2
	65-74	5,9	57,0	13,8	61,6
	75 +	24,0	52,7	6,8	53,4
Opleiding	Laag	6,2	61,2	17,8	66,8
	Midden	4,8	66,5	19,7	71,7
	Hoog	4,3	60,1	22,0	64,0
Werksituatie	Werkend	1,4	67,9	21,9	72,1
	- Zittend	3,4	54,5	13,0	56,4
	Scholier/studt	0,0	84,5	76,3	100,0
	Huisvr/man	7,2	58,2	22,7	64,9
	Niet-werkend	16,2	48,7	14,3	58,4
Sport	Wel sporter	1,6	66,7	26,9	73,1
	Niet sporter	9,0	58,5	11,6	62,4
Herkomst	Nederland	5,3	63,2	19,5	68,3
	Elders	6,6	52,3	13,8	59,6
Langdurige aandoening	Ja	13,6	56,3	15,6	60,3
	Nee	2,6	64,7	20,5	70,2

Het stimuleren van bewegen is vooral voor de volgende subgroepen in de volwassen bevolking relevant:

- Ouderen vanaf 65 jaar;
- Mensen met een lage opleiding;
- Niet-werkenden, mensen met een zittend beroep;
- Mensen die niet aan sport doen;
- Mensen met een langdurige aandoening

Soort lichaamsbeweging

Figuur 1 Tijdsbesteding naar aard van de lichamelijke activiteit van volwassen Nederlanders in procenten (2000-2005)



- Lichamelijke activiteiten tijdens werk en school vormen een belangrijk bestanddeel van lichamelijke activiteit van de Nederlandse bevolking, gevolgd door huishoudelijk werk. Samen zijn deze activiteiten goed voor 54% van de totale hoeveelheid lichamelijke activiteit.
- Klussen/tuinieren, lopen en fietsen, zijn goed voor 31% van de lichamelijke activiteiten.

Inactiviteit

In de periode 2000-2005 brengen Nederlanders variërend van 390-400 minuten per dag zittend of liggend door. De gemiddelde nachtrust is 450 minuten per etmaal.

Jeugd**Tabel 3 Percentage jeugdigen (12-17 jaar) dat inactief is en % dat voldoet aan de onderscheiden normen, 2000-2006 (gebaseerd op telefonische interviews)***

jaar	% inactief, 0 dagen 30 minuten actief	% inactief , 0-2 dagen 60 minute n actief	% NNGB, 30 minuten elke dag	% NNGB, 60 minute n elke dag	% fitnorm	% combinorm, gebaseerd op 30 minuten en fitnorm	% combinorm, gebaseerd op 60 minuten en fitnorm
2000	2,7		25,8		32,0	35,8	
2001	1,7		25,7		36,3	47,5	
2002	2,3		20,2		32,2	40,7	
2003	1,4		23,1		33,6	46,4	
2004	1,8		29,2		35,7	51,2	
2005	2,1		33,3		36,4	55,8	
2006	0,4	18,2	30,9	20,2	32,7	53,1	47,8

* In OBiN 2000-2005 is bij het in kaart brengen van bewegen door jeugd uitgegaan van 30 minuten per dag matig intensieve lichamelijke activiteit. Ten opzichte van de formele norm van 60 minuten per dag leveren de gegevens dan ook een gunstiger beeld van het aantal jeugdigen dat aan de norm voldoet. In 2006 is ook de norm van 60 minuten gehanteerd, welke voor 2006 ook in de tabel is weergegeven.

- Het percentage jeugdigen dat aan de 30 minuten norm voldoet geeft een sterk wisselend beeld over de jaren, en overstijgt slechts in 2005 de 30%.
- Het percentage jeugdigen dat aan de 60 minuten norm voldoet, gemeten in 2006, is slechts 20%.
- Ongeveer eenderde van de jeugd voldoet aan de fitnorm.
- Het percentage jeugdigen dat aan de combinorm voldoet (op basis van de 30 minuten norm) stijgt van 36% in 2000 tot bijna 56% in 2005. In 2006 ligt het percentage op 53%. Of hier sprake is van een dalende trend zullen vervolgmetingen moeten uitwijzen.
- Het percentage jeugdigen dat aan de combinorm voldoet, volgens de 60 minuten norm, is 48% in 2006.
- Het percentage inactieven, d.w.z. op geen enkele dag per week 30 minuten actief, varieert sterk over de jaren. In 2006 is een zeer laag percentage van 0,4% gemeten. Het percentage inactieven volgens de nieuwe norm, d.w.z. 0-2 dagen 60 minuten actief, is 18% in 2006.

B.2 Trendrapport Bewegen en Gezondheid 2004/2005

Hoofdstuk 3

Hoofdstuk 3

Het beweeggedrag in Nederland 2001-2006

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Samenvatting

In dit hoofdstuk wordt een overzicht gegeven van het beweeggedrag in Nederland. Er is hierbij gebruik gemaakt van de gegevens over de jaren 2001 t/m 2006 uit de module 'Gezondheid' van het Permanent Onderzoek Leefsituatie (POLS) van het Centraal Bureau voor de Statistiek (CBS).

Beweeggedrag is uitgedrukt in drie verschillende normen. De Nederlandse Norm Gezond Bewegen (de NNGB), de fitnorm en de combinorm. Voor al deze normen zijn de leeftijdsspecifieke afkappunten voor matig en zwaar intensieve activiteiten gebruikt zoals gedefinieerd binnen de NNGB.

Op basis van de resultaten in dit hoofdstuk moet worden geconcludeerd dat het beweegpatroon in Nederland, gemeten in termen van de NNGB, de fitnorm en de combinorm, in de periode 2001 tot en met 2006 niet noemenswaardig is veranderd.

3.1 Inleiding

Lichamelijke *in*activiteit wordt beschouwd als één van de belangrijkste onafhankelijke risicofactoren voor chronische ziekten (Bouchard, 1994; Pate, 1995; US Department of Health and Human Services, 1996; Maas, 1997⁴; Wendel-Vos, 2004). Om de ziektelast als gevolg van een inactieve leefstijl te verlagen is er in Nederland, net als in veel andere westerse landen, een richtlijn (zie kader) geformuleerd met betrekking tot de minimale hoeveelheid lichaamsbeweging die nodig is voor de instandhouding en verbetering van de gezondheid (Kemper, 2000). Deze richtlijn is bekend als de

Nederlandse Norm Gezond Bewegen, ofwel de NNGB. Daarnaast bestaat al enige tijd de fitnorm (zie kader). Deze richtlijn geeft een indicatie van de minimale hoeveelheid lichaamsbeweging die nodig is voor het bereiken van een optimale fitheid (American College of Sports Medicine, 1998). In 2002 werd de term 'combinorm' (zie kader) geïntroduceerd in het trendrapport Bewegen en Gezondheid (Ooijendijk, 2002). Om te beoordelen hoeveel mensen aan deze normen voldoen, kan onder meer gebruik worden gemaakt van de module 'Gezondheid' van het Permanent Onderzoek Leefsituatie (POLS) van het Centraal Bureau voor de Statistiek (CBS). In dit hoofdstuk zijn de gegevens over de jaren 2001 tot en met 2006 uit deze module gebruikt om het beweeggedrag in Nederland te beschrijven.

3.2 Materiaal en methoden

Vanaf 2001 bevat de POLS-module 'Gezondheid' voor personen van 12 jaar en ouder een vragenlijst over lichamelijke activiteit. Het betreft een gevalideerde vragenlijst (de SQUASH¹) waarin wordt gevraagd naar frequentie (dagen/week), duur (tijd per keer) en intensiteit (langzaam, gemiddeld, snel) van verschillende activiteiten uit de domeinen woon-werkverkeer, activiteit op werk en school, huishoudelijk werk en vrije tijd, waaronder sport (Wendel-Vos, 2003). Voor elk van deze domeinen is berekend hoeveel tijd per week (frequentie * duur) werd gerapporteerd. Daarnaast is voor alle deelnemers berekend hoeveel keer per week zij de benodigde tijd hebben besteed aan matig intensieve dan wel zwaar intensieve lichamelijke activiteit om zo te beoordelen of ze voldoen aan de NNGB, de fitnorm en de combinorm. Omdat de fitnorm alleen is gedefinieerd voor volwassenen, is de groep jeugd (12 t/m 17 jaar) voor deze norm en de combinorm buiten beschouwing gelaten. Bij het operationaliseren van de normen is gebruik gemaakt van de leeftijdsspecifieke afkappunten voor intensiteit zoals gedefinieerd binnen de NNGB (Kemper, 2000).

Voor het presenteren van de resultaten wordt voor de NNGB en voor de fitnorm een driedeling gehanteerd. De groep die wordt aangemerkt als 'inactief' besteedt op geen enkele dag in de week de benodigde tijd aan lichaamsbeweging. De groep 'semi-actief' doet dit wel op een aantal dagen, maar niet op voldoende dagen om aan de norm te voldoen. De groep 'normactief' voldoet aan respectievelijk de NNGB of de fitnorm.

¹ SQUASH staat voor Short QuesTionnaire to ASsess Health enhancing physical activity.

De Nederlandse Norm Gezond Bewegen

- Jongeren (jonger dan 18 jaar)
Dagelijks één uur tenminste matig intensieve lichamelijke activiteit (≥ 5 MET†), waarbij de activiteiten minimaal twee maal per week gericht zijn op het verbeteren of handhaven van lichamelijke fitheid (kracht, lenigheid en coördinatie).
Matig intensieve activiteit betekent voor jongeren bijvoorbeeld aerobics, skateboarden en hardlopen (8 km/uur).
- Volwassenen (18-55 jaar)
Tenminste een half uur tenminste matig intensieve lichamelijke activiteit (≥ 4 MET) op minimaal 5 dagen per week.
Matig intensieve activiteit betekent voor volwassenen bijvoorbeeld stevig wandelen (5 km/uur) en fietsen (16 km/uur).
- 55-plussers
Tenminste een half uur minimaal matig intensieve lichamelijke activiteit (≥ 3 MET) op minimaal 5 dagen per week. Voor niet-actieven, zonder of met beperkingen, is elke extra hoeveelheid lichaamsbeweging zinvol onafhankelijk van intensiteit, duur, frequentie en type activiteit.
Matig intensieve activiteit betekent voor 55-plussers bijvoorbeeld wandelen (4 km/uur) en fietsen (10 km/uur).

De fitnorm

- Gezonde volwassenen zouden tenminste drie keer per week gedurende minimaal 20 minuten zwaar intensief actief moeten zijn.

De combinorm

- Is een combinatie van beide bovenstaande normen. Iemand voldoet aan de combinorm wanneer hij/zij aan tenminste één van de beide normen voldoet.

† 1 MET komt overeen met het energieverbruik van rustig zitten. 3 MET komt dus overeen met een energieverbruik van 3 maal dit rustmetabolisme.

Voor dit hoofdstuk is gebruik gemaakt van de POLS-module 'Gezondheid' van de jaren 2001 tot en met 2006. Gemiddeld genomen was er informatie beschikbaar van ongeveer 6000 deelnemers per jaar.

3.3 Resultaten

Achtereenvolgens zullen de resultaten worden besproken voor de NNGB, de fitnorm en de combinorm.

De Nederlandse Norm Gezond Bewegen

Tabel 1 geeft de verdeling over de categorieën 'inactief', 'semi-actief' en 'normactief' van de Nederlandse bevolking over de jaren 2001 tot en met 2006.

Tabel 1 Percentage (95% betrouwbaarheidsinterval) 'inactief', 'semi-actief' en 'normactief' volgens de NNGB, Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
12 tot en met 17 jaar						
Inactief (0 dagen/week)	29,1 (24,9-33,3)	27,1 (23,0-31,3)	23,9 (20,4-27,5)	28,1 (24,7-31,5)	29,4 (25,5-33,2)	26,7 (22,9-30,5)
Semi-actief (1 t/m 6 dagen/week)	48,2 (43,6-52,8)	49,4 (44,7-54,0)	53,1 (48,9-57,3)	46,9 (43,1-50,7)	43,1 (38,9-47,2)	47,4 (43,1-51,7)
Normactief (7 dagen/week)	22,7 (18,8-26,6)	23,5 (19,6-27,5)	23,0 (19,5-26,5)	25,0 (21,8-28,3)	27,6 (23,9-31,3)	25,9 (22,1-29,6)
18 tot en met 54 jaar						
Inactief (0 dagen/week)	8,2 (7,2-9,1)	9,1 (8,0-10,1)	8,4 (7,5-9,4)	7,8 (7,0-8,7)	8,5 (7,6-9,4)	7,7 (6,8-8,6)
Semi-actief (1 t/m 4 dagen/week)	41,7 (40,0-43,5)	42,2 (40,5-43,9)	40,1 (38,5-41,7)	40,9 (39,4-42,4)	38,9 (37,3-40,4)	39,3 (37,7-41,0)
Normactief (5 t/m 7 dagen/week)	50,1 (48,4-51,8)	48,8 (47,0-50,5)	51,5 (49,8-53,1)	51,3 (49,7-52,9)	52,6 (51,0-54,2)	53,0 (51,3-54,6)
55 jaar en ouder						
Inactief (0 dagen/week)	16,7 (14,9-18,5)	14,7 (13,0-16,5)	12,5 (11,0-14,0)	14,8 (13,3-16,2)	14,6 (13,2-16,1)	15,8 (14,3-17,3)
Semi-actief (1 t/m 4 dagen/week)	19,5 (17,6-21,5)	20,7 (18,7-22,7)	21,1 (19,2-22,9)	22,6 (20,9-24,4)	20,8 (19,1-22,5)	19,8 (18,1-21,4)
Normactief (5 t/m 7 dagen/week)	63,8 (61,4-66,2)	64,6 (62,2-66,9)	66,4 (64,3-68,5)	62,6 (60,6-64,6)	64,6 (62,6-66,5)	64,5 (62,5-66,5)

NB: Door afronding tellen de percentages niet altijd exact op tot 100%.

Er lijkt een licht stijgende trend te zijn in normactiviteit, met name bij de jeugd en de volwassenen tot en met 54 jaar. Het percentage 'normactieven' verschilt echter niet significant tussen de verschillende jaren. Verder lijkt er een licht dalende trend te zijn in inactiviteit, met name bij de jeugd, maar ook hier is geen sprake van statistisch significante verschillen tussen jaren (Tabel 1).

In tabel 2a staat het percentage 'normactieven' onder de 12 tot en met 17 jarigen vermeld naar achtergrondkenmerken. In tabel 2b staat dezelfde informatie voor 18 tot en met 54 jarigen en in tabel 2c voor de 55-plussers.

Tabel 2a Percentage 'normactieven' volgens de NNGB onder 12 t/m 17 jarigen naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Jongen	23,7	25,8	27,0	31,4	33,3	32,8
Meisje	21,7	21,2	19,2	18,5	21,8	18,5
Leeftijd						
12-15	25,2	25,9	26,1	24,0	28,9	27,4
16-18	16,8	17,1	15,8	27,5	24,7	22,1
Opleiding						
Laag	24,8	26,8	25,7	25,9	31,1	30,4
Midden	21,4	18,9	15,3	30,5	25,5	20,4
Hoog	-	-	-	-	-	-
Herkomst						
Nederland	24,8	24,9	24,1	26,2	28,5	25,8
Elders	10,2	16,1	17,8	20,2	22,8	26,0

De met '-' gevulde cellen bevatten minder dan 50 waarnemingen.

Ook wanneer we op deze manier naar het percentage 'normactieven' kijken, zien we gemiddeld genomen geen grote verschillen tussen de jaren 2001 tot en met 2006. Er zijn drie uitzonderingen. Onder de jongens en de 12 tot en met 17 jarigen van niet-Nederlandse afkomst werd een oplopend percentage 'normactieven' gevonden (Tabel 2a). Onder de 55-plussers van niet-Nederlandse afkomst schommelt het percentage 'normactieven' tussen de verschillende jaren. Gemiddeld genomen lijkt het percentage 'normactieven' in deze groep af te nemen (Tabel 2c).

Tabel 2b Percentage 'normactieven' volgens de NNGB onder 18 t/m 54 jarigen naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Man	47,7	45,3	48,5	47,4	51,1	50,4
Vrouw	52,6	52,2	54,5	55,2	54,2	55,6
Leeftijd						
18-34	49,9	48,8	49,8	53,1	53,7	54,9
35-54	50,2	48,8	52,6	50,0	51,9	51,8
Opleiding						
Laag	50,4	46,6	48,6	48,4	51,8	51,2
Midden	52,3	50,5	53,0	53,0	54,7	55,3
Hoog	45,4	47,5	51,0	49,6	49,5	50,3
Herkomst						
Nederland	51,3	50,4	52,6	52,8	54,3	54,1
Elders	41,4	35,9	43,7	41,5	43,0	46,3

Tabel 2c Percentage 'normactieven' volgens de NNGB onder 55-plussers naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Man	70,3	67,9	72,5	66,4	70,0	68,9
Vrouw	57,9	61,6	61,1	59,2	59,8	60,4
Leeftijd						
55-64	71,4	70,7	74,2	68,6	72,3	71,9
65-74	65,9	68,6	67,0	66,7	65,2	66,8
75+	43,6	43,5	46,4	43,3	46,0	44,5
Opleiding						
Laag	54,7	54,8	58,3	52,5	56,0	55,4
Midden	69,3	73,1	73,0	65,8	68,5	70,0
Hoog	75,6	74,6	75,0	75,4	79,5	76,8
Herkomst						
Nederland	63,2	65,2	66,4	63,6	64,3	64,7
Elders	71,0	58,7	66,3	54,6	66,8	62,4

Tabel 3a t/m 3c geven het percentage 'inactieven' voor respectievelijk de 12 tot en met 17 jarigen, de 18 tot en met 54 jarigen en de 55-plussers. Deze tabellen tonen een soortgelijk beeld als de tabellen 2a t/m 2c. Gemiddeld genomen zien we geen grote verschillen tussen de jaren. Zowel onder de 12 tot en met 17 jarigen als de 55-plussers van niet-Nederlandse afkomst schommelt het percentage 'inactieven' tussen de verschillende jaren. Gemiddeld genomen lijkt het percentage 'inactieven' onder de 12 tot en met 17 jarigen van niet-Nederlandse afkomst af te nemen (Tabel 3a) en onder de 55-plussers van niet-Nederlandse afkomst toe te nemen (Tabel 3c).

Tabel 3a Percentage 'inactieven' volgens de NNGB onder 12 t/m 17 jarigen naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Jongen	20,2	23,7	17,1	19,8	23,7	20,6
Meisje	37,1	30,6	30,5	36,9	34,7	33,5
Leeftijd						
12-15 jaar	26,5	23,8	19,7	28,3	28,9	26,3
16-18 jaar	35,2	36,2	33,5	27,5	30,2	27,9
Herkomst						
Nederland	26,7	26,3	22,9	26,0	26,6	25,3
Elders	42,4	32,1	28,9	36,8	41,6	33,3

Tabel 3b Percentage 'inactieven' volgens de NNGB onder 18 t/m 54 jarigen naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Man	9,0	10,7	9,6	8,8	8,9	8,1
Vrouw	7,3	7,4	7,3	6,9	8,1	7,3
Leeftijd						
18-34	7,6	7,3	8,8	6,7	7,7	6,6
35-54	8,6	10,2	8,2	8,6	9,0	8,4
Opleiding						
Laag	14,4	15,6	14,3	15,2	14,1	13,7
Midden	6,7	7,7	8,3	7,1	7,3	7,0
Hoog	5,5	6,6	4,5	5,8	6,3	4,8
Herkomst						
Nederland	7,6	8,2	7,7	6,8	7,5	6,9
Elders	12,4	15,4	13,7	14,4	14,4	12,0

Tabel 3c Percentage 'inactieven' volgens de NNGB onder 55-plussers naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Man	13,7	13,4	7,3	11,9	9,7	11,8
Vrouw	19,4	16,0	17,1	17,3	19,0	19,4
Leeftijd						
55-64	8,9	7,8	6,5	7,9	8,6	9,0
65-74	15,6	13,3	11,3	14,4	14,1	14,1
75+	35,9	33,2	29,3	30,7	29,0	33,2
Opleiding						
Laag	25,3	23,1	18,9	23,7	20,5	23,1
Midden	11,0	7,4	7,9	10,9	11,4	12,0
Hoog	6,4	6,2	4,4	5,7	5,4	4,2
Herkomst						
Nederland	17,2	14,1	12,8	13,8	14,6	15,3
Elders	12,1	21,0	10,2	22,7	14,8	19,4

3.4 De fitnorm

Tabel 4 geeft de verdeling over de categorieën 'niet fitactief', 'semi-fitactief' en 'fitnormactief' van de volwassen Nederlandse bevolking over de jaren 2001 tot en met 2006. Vanwege de leeftijdsafhankelijke afkappunten voor intensiteit, worden deze percentages apart gepresenteerd voor 18 tot en met 54 jarigen en 55-plussers. Geredeneerd vanuit de fitnorm, veranderde het beweegpatroon van de Nederlandse bevolking in de periode 2001 t/m 2006 niet (Tabel 4).

Ook wanneer we de gegevens aangaande de fitnorm bekijken naar achtergrondkenmerken, zijn er geen veranderingen in het beweegpatroon van de Nederlandse bevolking in de periode 2001 t/m 2006 niet (Tabel 5a en 5b).

Tabel 4 Percentage (95% betrouwbaarheidsinterval) 'niet fitactief', 'semi-fitactief' en 'fitnormactief' volgens de fitnorm, Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
18 tot en met 54 jaar						
Niet fitactief (0 dagen/week)	60,0 (58,3-61,7)	60,9 (59,2-62,6)	61,3 (59,7-62,9)	59,1 (57,5-60,6)	59,7 (58,1-61,3)	58,9 (57,3-60,6)
Semi-fitactief (1 of 2 dagen/week)	23,1 (21,6-24,5)	22,6 (21,1-24,1)	21,7 (20,3-23,1)	22,8 (21,4-24,1)	21,6 (20,3-22,9)	21,7 (20,4-23,1)
Fitnormactief (3 t/m 7 dagen/week)	16,9 (15,6-18,2)	16,5 (15,2-17,8)	17,0 (15,7-18,3)	18,2 (17,0-19,4)	18,7 (17,4-19,9)	19,3 (18,0-20,7)
55 jaar en ouder						
Niet fitactief (0 dagen/week)	30,6 (28,4-32,9)	28,5 (26,3-30,7)	27,5 (25,5-29,5)	30,2 (28,3-32,1)	30,0 (28,1-31,9)	29,0 (27,1-30,9)
Semi-fitactief (1 of 2 dagen/week)	19,0 (17,0-20,9)	19,6 (17,6-21,5)	20,5 (18,7-22,3)	19,3 (17,7-21,0)	18,8 (17,1-20,4)	19,0 (17,4-20,7)
Fitnormactief (3 t/m 7 dagen/week)	50,4 (47,9-52,9)	51,9 (49,4-54,3)	52,0 (49,8-54,3)	50,5 (48,4-52,5)	51,3 (49,2-53,3)	52,0 (49,9-54,1)
NB: Door afronding tellen de percentages niet altijd exact op tot 100%.						

Tabel 5a Percentage 'fitnormactieven' onder 18 t/m 54 jarigen naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Man	21,8	20,7	21,2	22,6	22,9	24,0
Vrouw	11,7	12,4	12,8	13,7	14,5	14,6
Leefstijd						
18-34	22,8	21,5	22,2	23,7	25,2	25,3
35-54	12,9	13,0	13,3	14,3	14,5	15,6
Opleiding						
Laag	9,2	9,6	9,3	10,5	11,0	10,5
Midden	17,4	17,1	16,9	18,6	18,9	20,2
Hoog	22,6	20,9	22,7	21,1	23,9	24,1
Herkomst						
Nederland	17,1	17,2	17,1	18,4	19,5	20,0
Elders	15,6	10,6	16,7	17,1	13,8	15,8

Tabel 5b Percentage 'fitnormactieven' onder 55-plussers naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Man	54,9	55,3	55,0	53,1	52,7	55,6
Vrouw	46,4	49,0	49,4	48,1	49,9	48,6
Leefstijd						
55-64	58,4	60,3	59,0	56,4	57,9	59,1
65-74	53,6	55,8	54,6	53,9	53,6	54,4
75+	27,5	26,0	30,3	32,0	32,5	32,7
Opleiding						
Laag	42,1	44,0	45,8	41,3	42,8	44,3
Midden	57,2	57,2	56,8	53,1	55,9	54,5
Hoog	58,4	63,8	59,4	63,2	64,2	67,2
Herkomst						
Nederland	50,4	52,4	52,7	51,8	51,3	52,1
Elders	49,6	46,0	46,5	38,4	50,9	51,0

3.5 De combinorm

Tabel 6 geeft de verdeling over de categorieën 'niet combinormactief' en 'wel combinormactief' voor de volwassen Nederlandse bevolking in de periode 2001 tot en met 2006. De percentages verschillen niet significant tussen de verschillende jaren.

Tabel 6 Percentage (95% betrouwbaarheidsinterval) 'niet combinormactief' en 'wel combinormactief' volgens de combinorm, Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
18 tot en met 54 jaar						
Niet combinormactief	47,2 (45,4-48,9)	48,7 (46,9-50,5)	45,5 (43,8-47,1)	45,9 (44,4-47,5)	44,1 (42,5-45,7)	44,3 (42,7-46,0)
Wel combinormactief	52,8 (51,1-54,6)	51,3 (49,5-53,1)	54,5 (52,9-56,2)	54,1 (52,5-55,6)	55,9 (54,3-57,5)	55,7 (54,0-57,3)
55 jaar en ouder						
Niet combinormactief	33,8 (31,5-36,2)	31,8 (29,6-34,1)	30,2 (28,2-32,3)	33,7 (31,8-35,7)	32,2 (30,2-34,1)	32,3 (30,3-34,2)
Wel combinormactief	66,2 (63,8-68,5)	68,2 (65,9-70,4)	69,8 (67,7-71,8)	66,3 (64,3-68,2)	67,8 (65,9-69,8)	67,7 (65,8-69,7)

Wat betreft veranderingen in het percentage 'combinormactieven' over de periode 2001 tot en met 2006 werden ook binnen de groepen met dezelfde achtergrondkenmerken geen grote veranderingen gevonden (Tabel 7a en 7b).

Tabel 7a Percentage 'combinormactieven' onder 18 t/m 54 jarigen naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Man	51,7	48,5	53,0	51,5	55,1	53,7
Vrouw	54,0	54,1	56,2	56,6	56,8	57,7
Leefstijd						
18-34	53,8	52,6	55,1	57,0	58,6	58,4
35-54	52,1	50,4	54,2	52,0	54,3	54,0
Opleiding						
Laag	50,9	47,5	49,8	49,9	53,9	52,8
Midden	54,7	53,1	55,8	56,1	57,7	57,9
Hoog	50,7	51,2	55,8	52,4	54,2	54,0
Herkomst						
Nederland	54,0	53,0	55,8	55,5	57,6	57,1
Elders	43,9	37,9	46,7	45,2	46,0	47,8

Tabel 7b Percentage 'combinormactieven' onder 55-plussers naar achtergrondkenmerken. Bron: CBS-POLS 2001-2006.

	2001	2002	2003	2004	2005	2006
Geslacht						
Man	72,7	71,4	75,8	69,6	72,9	71,9
Vrouw	60,2	65,2	64,5	63,2	63,3	63,9
Leefstijd						
55-64	73,9	74,7	77,0	72,1	75,0	75,9
65-74	68,2	72,1	70,5	69,9	69,9	69,4
75+	45,7	46,6	50,6	48,0	48,5	47,0
Opleiding						
Laag	56,9	58,4	62,3	55,7	59,3	59,0
Midden	72,1	76,5	75,7	69,9	71,6	72,2
Hoog	78,0	78,9	77,8	79,2	83,4	81,7
Herkomst						
Nederland	65,6	68,9	69,8	67,2	67,6	67,9
Elders	73,2	60,1	69,1	58,1	69,4	66,1

3.6 Discussie en conclusie

In dit hoofdstuk is gebruik gemaakt van gegevens uit vragenlijstonderzoek. Een discussiepunt bij vragenlijstonderzoek is altijd in hoeverre over- of onderrapportage de resultaten heeft verstoord. Omdat gedurende deze periode gebruik is gemaakt van een identieke vragenlijst en verwerkingsprocedure, heeft een eventuele vertekening door over- of onderrapportage geen invloed op de vergelijking van de resultaten tussen de verschillende jaren.

De resultaten van de CBS-POLS-module 'Gezondheid' over de jaren 2001 tot en met 2006 laten zien dat het beweegpatroon in Nederland, uitgedrukt in termen van de NNGB, de fitnorm en de combinorm niet noemenswaardig is veranderd. Dit geldt gemiddeld genomen ook wanneer specifiek naar groepen met dezelfde achtergrondkenmerken wordt gekeken. Alleen in termen van de NNGB is in de afgelopen jaren mogelijk een verbetering opgetreden in het beweegpatroon van jongens (12 tot en met 17 jaar) en 12 tot en met 17 jarigen van niet-Nederlandse afkomst. Hetzelfde geldt voor een mogelijke verslechtering van het beweegpatroon van 55-plussers van niet-Nederlandse afkomst. Vanwege de schommelingen in de schattingen voor de deelnemers van niet-Nederlandse afkomst tussen de verschillende jaren, lijkt het verstandig de mogelijke trend nog een aantal jaren te volgen alvorens hier een conclusie aan te verbinden.

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B.3 Fysieke activiteit van volwassen Nederlanders met chronische aandoeningen

FYSIEKE ACTIVITEIT VAN VOLWASSEN NEDERLANDERS MET CHRONISCHE AANDOENINGEN

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Inleiding

In Nederland zijn naar schatting tussen de 1,5 miljoen en 4,5 miljoen volwassenen met één of meerdere chronische aandoeningen. De top 5 van de meest voorkomende aandoeningen is knie- en heupartrose, gehoorstoornissen, coronaire hartziekten, astma en visusstoornissen. Als gevolg van de bevolkingsgroei en vergrijzing wordt in Nederland in de komende 20 jaar een toename van 25-55% verwacht van personen met chronische aandoeningen.

Bij een chronische aandoening is als gevolg van een ziekte of trauma vaak sprake van langdurige of blijvende restverschijnselen als pijn, vermoeidheid, schadelijke anatomische of structurele veranderingen, en verlies van mentale of fysiologische functies. Over het algemeen geldt dat mensen met chronische aandoeningen minder fysiek belastbaar zijn dan mensen zonder chronische aandoeningen. Met als gevolg dat mensen met chronische aandoeningen een extra verhoogd risico hebben op een inactieve leefstijl. Deze inactieve leefstijl kan het gevolg zijn van een chronische aandoening, maar kan ook bepaalde chronische aandoeningen veroorzaken. Chronische aandoeningen als coronaire hartziekten en diabetes kunnen bijvoorbeeld het gevolg zijn van een inactieve leefstijl. Terwijl andere chronische aandoeningen als reumatoïde artritis en multiple sclerose niet worden veroorzaakt door een inactieve leefstijl maar een inactieve leefstijl tot gevolg kunnen hebben.

Een inactieve leefstijl bij mensen met chronische aandoeningen verhoogt niet alleen het risico op overgewicht en chronische aandoeningen, maar ook het risico op functionele beperkingen en daarmee het verlies op zelfstandigheid. Daartegenover staat dat verantwoord bewegen voor een groot aantal chronische aandoeningen het beloop gunstig kan beïnvloeden, en daarmee de kwaliteit van leven en de zelfstandigheid van mensen met chronische aandoeningen. In tabel 1 wordt een overzicht gegeven van de bewezen positieve effecten van bewegen op de gezondheidsparameters, het ontstaan van ziekten, als ook het beloop van ziekten.

Tabel 1 Bewezen positieve effecten van beweging op de gezondheid (Bron: Ministerie van VWS, 2001)	
Gezondheidsparameters (fysieke, geestelijke en psychosociale)	<i>Overtuigend bewijs:</i> lichaamsgewicht, vetpercentage, bloeddruk, ratio HDL/LDL-cholesterol, het triglyceridengehalte, de glucosetolerantie, de insulinegevoeligheid, de botdichtheid, het slaappatroon <i>Aanwijzingen voor een gunstig effect:</i> coördinatie, reactievermogen, reactiesnelheid, geheugen, psychosociaal welbevinden, gemoedstoestand, zelfredzaamheid, zelfvertrouwen, zelfwaarde
Ontstaan van ziekten	<i>Overtuigend bewijs:</i> Hart- en vaatziekten, niet insuline afhankelijke diabetes, overgewicht en osteoporose <i>Sterke aanwijzingen voor een gunstig effect:</i> beroerte, depressie, colonkanker en borstkanker
Beloop van ziekten	<i>Overtuigend bewijs:</i> coronaire hartziekten, niet insuline afhankelijke diabetes en overgewicht <i>Sterke aanwijzingen voor een gunstig effect:</i> CARA, osteoporose, beroerte, angst en depressie, reumatoïde artritis, epilepsie en cystic fibrosis
	<i>Aanwijzingen voor een gunstig effect:</i> o.a. artrose, bekkeninstabiliteit, nierziekten, lage rugpijn, ziekte van Parkinson en lichamelijke, verstandelijke en zintuiglijke handicap

De hoeveelheid lichamelijke activiteit die minimaal nodig is om de gezondheid te handhaven is verwoord in de Nederlandse Norm Gezond Bewegen (NNGB), die tot stand kwam op basis van consensus onder Nederlandse experts. Deze experts lieten zich hierbij leiden door internationale epidemiologische studies over lichamelijke activiteit in relatie tot gezondheid. De NNGB stelt dat afhankelijk van de leeftijd het aanbevolen is 30-60 minuten matig intensief te bewegen, op tenminste vijf dagen per week. De hoeveelheid lichamelijke activiteit die nodig is om de lichamelijke fitheid te verbeteren is gedurende 20 minuten intensief (50-85% VO₂max) te bewegen, op tenminste drie tot vijf dagen per week. Mensen worden inactief genoemd als ze op geen enkele dag tenminste 30 minuten matig intensief lichamenlijk actief zijn.

Deze richtlijnen gelden in principe ook voor mensen met chronische aandoeningen, waarbij de kanttekening wordt geplaatst dat deze normen voor subgroepen van chronisch zieken soms niet haalbaar zullen zijn. Vanwege het ontbreken van wetenschappelijke bewijsvoering is het niet duidelijk op basis van welke criteria een verantwoorde hoeveelheid lichamelijke activiteit aanbevolen kan worden voor verschillende subgroepen van chronisch zieken. Daarom wordt in de praktijk op pragmatische wijze bekeken welke hoeveelheid lichamelijke activiteit haalbaar is op basis van individuele mogelijkheden en beperkingen van chronisch zieken.

In Box 1 zijn de normen voor bewegen weergegeven.

Box 1 Normen voor bewegen

- Inactief: op geen enkele dag in de zomer en winter tenminste 30 minuten matig intensief lichamelijk actief
- Nederlandse Norm Gezond Bewegen voor volwassenen (NNGB): 30 minuten per dag tenminste matig inspannende activiteiten op tenminste vijf dagen van de week;
- Fitnorm: minstens 3 maal per week 20 minuten inspannende lichaamsbeweging;
- Combinorm: voldoet aan NNGB en/of Fitnorm

In 2003 liet de quick scan 'Chronisch zieken en bewegen' zien dat chronisch zieken minder vaak aan de NNGB voldeden dan niet-chronisch zieken (Chorus & Hopman-Rock, 2003). In het verlengde daarvan gaven ook de resultaten van de onderbouwende studie voor het Nationaal Actieplan Sport en Bewegen (NASB) aan dat extra inspanningen vereist zijn om het bewegen te stimuleren van mensen met chronische aandoeningen (Wendel-Vos, e.a., 2005). Dit heeft tot gevolg gehad dat het Ministerie van Volksgezondheid, Welzijn en Sport momenteel een Actieplan Chronisch Zieken laat voorbereiden, waarin concrete activiteiten worden gedefinieerd om een actieve leefstijl bij mensen met chronische aandoeningen te bevorderen.

In dit hoofdstuk wordt op basis van gegevens van de Monitor Bewegen en Gezondheid over de periode 2000-2004 inzicht gegeven in het beweeggedrag van volwassenen met chronische aandoeningen. Sinds 2003 is er in de Monitor specifiek gevraagd naar diagnoses, waardoor het voor het eerst mogelijk is een uitgebreide beschrijving te geven van het beweeggedrag van verschillende diagnosegroepen. Deze gegevens kunnen worden gebruikt om op termijn de invloed van beleidsmaatregelen op het beweeggedrag van verschillende diagnosegroepen te evalueren.

Methode*Monitor Bewegen en Gezondheid*

De 'Monitor Bewegen en Gezondheid' maakt deel uit van de continue enquête Ongevallen en Bewegen in Nederland (OBiN) die sinds 2000 in opdracht van het Ministerie van Volksgezondheid, Welzijn en Sport wordt uitgevoerd.

Het doel van de Monitor Bewegen en Gezondheid is om inzicht te krijgen in trends met betrekking tot onder meer (1) de hoeveelheid lichaamsbeweging van de Nederlandse bevolking, (2) het aantal Nederlanders dat geheel inactief is, (3) de kennis onder Nederlanders over gezondheidskundig gewenste hoeveelheid lichaamsbeweging en (4) de voorzieningen op het terrein van lichaamsbeweging. De 'Monitor Bewegen en Gezondheid' bestaat uit een beweegvragenlijst die ontwikkeld is door TNO. In 1999 is de vragenlijst geprogrammeerd voor telefonisch interviewen en in een pilot uitgetest. De feitelijke dataverzameling loopt vanaf 1 januari 2000.

Vanaf 2000 wordt er één vraag gesteld om inzicht te krijgen in het voorkomen van chronische aandoeningen. Deze vraag luidt als volgt: *'Heeft u in de afgelopen 12 maanden last gehad van één of meerdere langdurige aandoeningen of ziekten?'* Sinds 2003 wordt er op verzoek van het Ministerie van VWS in de Monitor ook specifiek naar eventuele medische diagnoses gevraagd, indien respondenten bevestigend op deze vraag antwoorden, zodat specifiek inzicht gekregen kan worden in het beweeggedrag van mensen met chronische aandoeningen. In de projectgroep van de Monitor is een lijst opgesteld die onderscheid maakt in 9 diagnosegroepen en een groep overige diagnoses. De diagnosegroepen die worden onderscheiden zijn: rug- en gewrichtsklachten, hart- en vaatziekten, bronchitis/astma/COPD, maag- en

darmstoornissen, diabetes mellitus I en II, huidziekten, psychische klachten, gehoorproblemen en kanker.

Steekproef

Elk jaar wordt met behulp van het systeem Random Digit Dialling (RDD) een representatieve steekproef getrokken. Met behulp van het RDD systeem wordt uit een database van alle uitgegeven telefoonnummerseries een aselechte steekproef getrokken. Vervolgens worden de laatste twee cijfers van de telefoonnummers door de computer gewist en at random vervangen door twee andere. Door deze procedure maken alle theoretisch mogelijke telefoonnummers evenveel kans om in de steekproef te komen. Via het RDD systeem wordt een ongeclusterde steekproef van huishoudens verkregen. Om een personensteekproef te verkrijgen wordt na inventarisatie van de personen in het gezin –gebaseerd op toeval- door de computer één persoon uitgekozen als respondent. Per jaar bestaat de representatieve steekproef van de Nederlandse Bevolking uit circa 8.000 personen van 12 jaar en ouder die vragen voorgelegd krijgen over de Nederlandse Norm Gezond Bewegen (NNGB). Een op de vier personen krijgt een uitgebreidere set met (meer gedetailleerde) vragen over bewegen voorgelegd.

Variabelen en analyse

Op basis van enkele specifieke vragen over lichaamsbeweging is berekend welk percentage van de respondenten inactief is en de percentages respondenten die voldoen aan de NNGB, de fitnorm en een combinatie daarvan (de combi-norm).

In dit hoofdstuk zijn percentages gepresenteerd voor respondenten met chronische aandoeningen en respondenten zonder chronische aandoeningen, met de daarbij berekende 95% betrouwbaarheidsintervallen. Het betrouwbaarheidsinterval geeft aan hoe nauwkeurig de schatting is (hoe nauwer het interval hoe nauwkeuriger de schatting). Daarnaast kan aan de hand van het betrouwbaarheidsinterval onderzocht worden of er significante verschillen aanwezig zijn tussen percentages. Voor de berekening van de betrouwbaarheidsintervallen is gebruik gemaakt van de formule van Fleiss (1981).

Resultaten

In de periode 2000-2004 gaf gemiddeld 20% van de volwassen respondenten aan één of meerdere chronische aandoeningen te hebben. Geëxtrapoleerd naar de Nederlandse bevolking betekent dit dat er naar schatting 2 miljoen volwassen Nederlanders zijn met één of meerdere chronische aandoeningen. In tabel 2 is een beschrijving gegeven van de kenmerken van de respondenten met chronische aandoeningen (chronisch zieken) vergeleken met respondenten zonder chronische aandoeningen (niet chronisch zieken).

Tabel 2 Kenmerken van respondenten met chronische aandoeningen vergeleken met respondenten zonder chronische aandoeningen (2000-2004)

Kenmerken	Chronisch zieken (%)	Niet Chronisch zieken (%)
Geslacht		
vrouw	58,7	48,7
man	41,3	51,3
Leeftijd		
18-34 jaar	20,6	31,5
35-54 jaar	36,4	39,7
55-64 jaar	16,9	13,5
65-74 jaar	14,1	8,5
75 jaar en ouder	12,0	6,8
Opleidingsniveau		
LO, MAVO	41,2	32,0
MBO, HAVO, VWO	29,2	31,9
HBO, Universiteit	29,6	36,1
Maatschappelijke positie		
Werkend	47,1	65,8
Scholier/student	2,4	4,2
Huisvrouw/-man	16,4	11,7
Niet werkend	34,1	18,4

Personen met chronische aandoeningen zijn relatief vaker van het vrouwelijke geslacht, zijn vaker op hogere leeftijd, zijn vaker lager opgeleid en hebben minder vaak een betaalde baan vergeleken met personen zonder chronische aandoeningen.

Hoeveel bewegen mensen met chronische aandoeningen vergeleken met mensen zonder chronische aandoeningen?

In tabel 3 is het percentage inactieve volwassen Nederlanders met en zonder chronische aandoeningen weergegeven en het percentage dat aan de beweegnormen voldoet in de periode 2000 tot en met 2004.

In tabel 3 is af te lezen dat er in de periode 2000-2003 sprake was van een dalende trend in het percentage mensen met chronische aandoeningen dat inactief was (dat wil zeggen op geen enkele dag van de week minimaal 30 minuten matig intensief bewegen). Vervolgens is er in 2003 een statistisch significante stijging van het percentage inactieve mensen met chronische aandoeningen van bijna 5% ten opzichte van 2002. In 2004 is het percentage weer iets gedaald van 14,1% naar 13,5%, hoewel niet significant. Of hiermee ook een dalende trend is ingezet, zal de komende jaren moeten blijken. Uitgaande van 2 miljoen mensen met een chronische aandoening kan op basis van deze percentages geschat worden dat tussen de 194.000 en 282.000 volwassen Nederlanders met een chronische aandoening lichamelijk inactief zijn. Vergeleken met mensen zonder chronische aandoeningen zijn mensen met chronische aandoeningen anderhalf tot twee keer vaker inactief.

Voor het percentage mensen met chronische aandoeningen dat aan de NNGB voldoet is een stijgende trend te zien vanaf 2001 tot en met 2004. Hoewel het percentage van mensen met chronische aandoeningen over de jaren heen lager is dan het percentage

mensen zonder chronische aandoeningen dat aan de norm voldoet, zijn de percentages per jaar in geen enkel geval statistisch significant verschillend.

Het percentage volwassen Nederlanders met chronische aandoeningen dat voldoet aan de fitnorm varieert over de jaren 2000 tot en met 2004 van minimaal 15,1% tot maximaal 19,7%. Dit betreft naar schatting tussen de 302.000 en 394.000 volwassen Nederlanders met een chronische aandoening.

De percentages zijn niet statistisch significant lager dan de percentages mensen zonder chronische aandoeningen die aan de fitnorm voldoen.

Het percentage volwassen Nederlanders met chronische aandoeningen dat voldoet aan de combinorm en dus voldoende lichaamsbeweging heeft, laat vanaf 2001 een stijgende trend zien van 43% naar ruim 53% in 2004. In alle jaren zijn de percentages van mensen die aan de combinorm voldoen met chronische aandoeningen lager dan de percentages mensen zonder chronische aandoeningen. Het verschil tussen deze groepen is in het peiljaar 2001 en in het peiljaar 2004 statistisch significant.

Tabel 3 Percentage inactieve volwassen Nederlanders met en zonder chronische aandoeningen en percentage dat aan de beweegnormen voldoet (2000-2004)

	Peiljaar				
	2000	2001	2002	2003	2004
<i>Inactief</i>					
chronisch zieken (%)	13,7 [10,8-17,2]	12,8 [10,0-16,2]	9,7 [7,4-12,6]	14,1 [12,6-14,1]	13,5 [12,0-15,1]
niet chronisch zieken (%)	8,7 [7,5-10,1]	6,9 [5,8-8,2]	6,3 [5,3-7,5]	7,1 [6,5-7,8]	6,7 [6,1-7,4]
<i>NNGB</i>					
chronisch zieken (%)	43,6 [36,9-50,6]	38,6 [31,5-50,6]	40,3 [33,6-47,4]	45,3 [41,8-48,8]	47,1 [43,8-50,4]
niet chronisch zieken (%)	43,9 [40,5-47,4]	45,4 [42,0-48,8]	44,9 [41,5-48,3]	47,9 [46,1-49,7]	51,6 [49,9-53,3]
<i>Fitnorm</i>					
chronisch zieken (%)	15,7 [8,4-26,7]	15,1 [7,9-26,2]	19,7 [12,5-29,4]	16,9 [12,9-21,8]	18,4 [14,5-23,1]
niet chronisch zieken (%)	18,9 [15,0-23,5]	18,6 [14,6-23,3]	23,2 [19,2-27,7]	22,3 [20,3-24,6]	25,3 [23,1-27,6]
<i>Combinorm</i>					
chronisch zieken (%)	48,8 [42,5-55,1]	43,0 [37,1-49,1]	46,7 [40,8-52,6]	51,0 [47,7-54,2]	53,3 [50,0-56,6]
niet chronisch zieken (%)	52,7 [49,5-55,9]	52,9 [49,7-56,1]	53,0 [49,8-56,2]	56,1 [54,4-57,7]	61,3 [59,7-62,9]

Er is nagegaan of er verschillen zijn in achtergrondkenmerken tussen inactieve volwassenen met chronische aandoeningen en volwassenen met chronische aandoeningen die aan de NNGB voldoen (zie Tabel 4). Uit tabel 4 valt af te lezen dat inactieve volwassenen met een chronische aandoening relatief vaker een hogere leeftijd hebben, ernstig overgewicht, en vaker geen werk hebben dan volwassenen met een chronische aandoening die wel voldoende lichamelijk actief zijn volgens de NNGB.

Tabel 4 Kenmerken van volwassen Nederlanders met chronische aandoeningen uitgesplitst naar mate van activiteit volgens de NNGB, gemiddeld over de periode 2003-2004

Kenmerken	inactieve* personen met chronische aandoeningen (%)	Normactieve personen met chronische aandoeningen (%)
Geslacht		
Vrouw	60,3	60,0
Man	39,7	40,0
Leeftijd		
18-34 jaar	9,8	21,3
35-54 jaar	28,7	39,6
55-64 jaar	12,9	47,4
65-74 jaar	20,0	39,6
75 jaar en ouder	28,6	8,6
Body Mass Index		
BMI < 25 kg/m ²	43,6	55,0
BMI 25-30 kg/m ²	35,2	34,3
BMI > 30 kg/m ²	21,2	10,7
Opleidingsniveau		
LO, MAVO	54,0	40,2
MBO, HAVO, VWO	24,1	30,5
HBO, Universiteit	21,8	29,2
Maatschappelijke positie		
Werkend	25,7	52,0
Scholier/student	0,5	2,3
Huisvrouw/-man	17,5	16,7
Niet werkend	56,3	29,1

* inactief: niet voldoende actief (minimaal 30 minuten) op geen enkele dag in de zomer en de winter

Zoals aangegeven in de methodesectie is op basis van gecombineerde gegevens uit de peiljaren 2003 en 2004 onderscheid mogelijk naar diagnosegroepen, zoals die in de monitor gebruikt worden. Omdat de absolute aantallen voor de verschillende diagnosegroepen relatief klein zijn, zijn de gepoolde cijfers van de jaren 2003 en 2004 berekend per diagnosegroep om de betrouwbaarheid te vergroten.

In tabel 5 wordt een overzicht gegeven van het percentage volwassen Nederlanders uitgesplitst naar verschillende diagnosegroepen en percentage normactieven volgens de NNGB, de fitnorm en de combinorm, gebaseerd op de gepoolde data van peiljaren 2003 en 2004. Om de precisie van de schatting aan te geven zijn ook de 95% betrouwbaarheidsintervallen gepresenteerd. Hoe ruimer het betrouwbaarheidsinterval hoe minder precies de schatting is als gevolg van het geringe absolute aantal personen binnen een bepaalde diagnosegroep aanwezig in de steekproef.

Tabel 5 Percentage inactieve volwassen Nederlanders uitgesplitst naar diagnosegroepen en percentage norm-actieven volgens de NNGB, de fitnorm, en de combinorm, gemiddeld over de periode 2003-2004 [95% betrouwbaarheidsintervallen]*

Diagnosegroep	Inactief	NNGB	Fitnorm	Combinorm
Rug- en gewrichtsklachten	14,9 [12,8-17,0]	49,3 [46,4-52,2]	16,5 [14,4-18,6]	54,8 [52,0-57,5]
Migraine	8,1 [0,9-15,3]	33,7 [21,2-46,2]	13,9 [4,8-23,0]	42,5 [29,2-55,8]
Hart- en vaatziekten	21,8 [17,8-25,8]	44,1 [39,3-48,9]	13,5 [10,2-16,8]	48,2 [43,3-53,0]
Bronchitis, Astma, COPD	16,3 [12,4-20,2]	43,1 [37,9-48,3]	17,4 [13,4-21,4]	49,7 [44,4-55,0]
Maag- en darmstoornissen	14,0 [8,7-19,3]	37,4 [29,9-44,9]	21,3 [15,0-27,6]	45,9 [38,2-53,6]
Diabetes Mellitus I en II	18,5 [13,8-23,3]	42,8 [36,8-48,8]	10,3 [6,6-14,0]	46,8 [40,7-53,0]
Huidziekten	10,5 [2,2-18,8]	35,7 [22,8-48,6]	13,4 [4,3-22,5]	45,9 [32,5-59,3]
Psychische aandoeningen	11,2 [5,8-16,6]	46,0 [37,4-54,6]	20,7 [13,7-27,7]	53,4 [44,8-62,0]
Gehoortoornissen	10,7 [0,0-25,8]	43,1 [18,8-67,4]	10,8 [0,0-26,0]	46,0 [21,6-70,4]
Kanker	24,9 [17,9-32,0]	32,3 [24,7-39,9]	9,9 [5,1-14,7]	35,6 [27,6-43,3]
Algemene volwassen bevolking zonder chronische aandoeningen	6,9 [6,3-7,6]	49,8 [48,0-51,5]	23,8 [21,7-26,1]	58,7 [57,1-60,3]

* **vet gedrukt** betekent dat er een statistisch significant verschil is met de algemene bevolking

Het percentage inactiviteit ligt voor alle diagnosegroepen hoger dan voor volwassenen zonder chronische aandoeningen. Voor de diagnosegroepen rug- en gewrichtsklachten, hart- en vaatziekten, bronchitis/astma/COPD, maag- en darmstoornissen, diabetes mellitus I en II en kanker geldt dat het verschil met de algemene bevolking zonder chronische aandoeningen statistisch significant is. De verschillen tussen de diagnosegroepen en de algemene bevolking, die statistisch significant zijn variëren van 7,1 tot 18,0 procentpunten. Vanuit klinisch standpunt wordt als vuistregel gehanteerd dat verschillen groter dan 5% klinisch relevant zijn. Het betreft hier dus in alle gevallen niet alleen een statistisch relevant verschil, maar ook een klinisch relevant verschil.

Voor de overige diagnosegroepen geldt dat de absolute aantallen in de steekproef dusdanig klein zijn dat er geen statistisch significant verschil aangetoond kan worden.

Het percentage dat voldoet aan de NNGB ligt voor alle diagnosegroepen lager dan voor volwassenen zonder chronische aandoeningen. Voor de diagnosegroepen migraine, hart- en vaatziekten, maag- en darmstoornissen en kanker geldt dat het verschil met de algemene bevolking statistisch significant is. De verschillen tussen de diagnosegroepen en de algemene bevolking, die statistisch significant zijn, variëren van 5,1% tot 17,5%. Uitgaande van de aanname dat 5% verschil klinisch relevant is, betreft het ook hier in alle gevallen een klinisch relevant verschil.

Met uitzondering van de diagnosegroep rug- en gewrichtsklachten geldt dat de absolute aantallen in de steekproef te klein zijn om een statistisch significant verschil aan te kunnen tonen.

Wat betreft de fitnorm, dat wil zeggen minstens drie keer per week 20 minuten per keer intensieve lichaamsbeweging, scoren de diagnosegroepen rug- en gewrichtsklachten, hart- en vaatziekten, bronchitis/astma/COPD, diabetes mellitus type I en II, en kanker statistisch significant lager vergeleken met de algemene bevolking. De verschillen variëren van 6,4% tot 13,9%, hetgeen aangemerkt kan worden als klinisch relevante verschillen.

Met uitzondering van de diagnosegroepen rug- en gewrichtsklachten en psychische aandoeningen voldoet binnen de overige diagnosegroepen meer dan 50% van de mensen niet aan de combinorm, en beweegt dus te weinig om hun gezondheid te kunnen handhaven.

Conclusie/aanbevelingen

Op basis van het gepresenteerde cijfermateriaal kan geconcludeerd worden dat het beeld dat mensen met chronische aandoeningen lichamelijk minder actief zijn opnieuw bevestigd wordt en dat de situatie in de afgelopen jaren niet verbeterd is. Uit de quick scan ‘Chronisch zieken en bewegen’ uitgevoerd in 2003 kwam naar voren dat in de leeftijdsgroep 18-64-jarigen mannen met Astma/COPD en vrouwen met artrose, andere aandoeningen van het bewegingsstelsel en neurologische aandoeningen belangrijkste risicogroepen vormen voor bewegingsarmoede. In de leeftijdsgroep 65 jaar en ouder zijn de belangrijkste risicogroepen mannen met hart- en vaatziekten, astma/COPD en vrouwen met hart- en vaatziekten, artrose, andere aandoeningen van het bewegingsstelsel, kanker, diabetes mellitus en astma/COPD (Chorus & Hopman-Rock, 2003). Deze groepen worden ook weer op basis van de nieuwe cijfers geïdentificeerd met dien verstande dat de huidige nieuwe cijfers uit de Monitor verdere nuancerings van de mate van lichamelijke activiteit laten zien ten aanzien van risicogroepen.

Zo laten de cijfers zien dat de diagnosegroepen rug- en gewrichtsklachten, hart- en vaatziekten, diabetes mellitus I en II, bronchitis/astma/COPD, maag- en darmstoornissen, en kanker belangrijke risicogroepen vormen voor inactiviteit. De diagnosegroepen hart- en vaatziekten, maag- en darmstoornissen en kanker voldoen daarnaast ook het minst vaak aan de NNGB. Daarentegen scoren de diagnosegroepen rug- en gewrichtsklachten, diabetes mellitus I en II en bronchitis/astma/COPD niet significant lager op de NNGB dan mensen zonder chronische aandoeningen. Opvallend is ook dat van de diagnosegroep migraine slechts een relatief klein percentage aan de NNGB voldoet, terwijl de mate van inactiviteit vergelijkbaar is met de algemene bevolking.

Uitgaande van de fitnorm kan geconcludeerd worden dat mensen behorend tot de diagnosegroepen rug- en gewrichtsklachten, hart- en vaatziekten, bronchitis/astma/COPD, diabetes mellitus I en II en kanker relatief minder vaak lichamelijk (zwaar) intensief bewegen.

De bevindingen voor de mate van inactiviteit en de mate waarin wordt voldaan aan de verschillende beweegnormen van de diagnosegroepen die worden onderscheiden in de monitor, weerspiegelen deels ook de diversiteit in diagnoses en ernstgradaties die er bestaan binnen de diagnosegroepen. Hierdoor is voorzichtigheid geboden met het (door)trekken van conclusies naar de diverse subgroepen die zich in een dergelijk cluster bevinden. Bij hartpatiënten bijvoorbeeld die gedotterd zijn, zijn er aanzienlijk minder grote gevolgen voor de mate van lichamelijke activiteit dan voor patiënten met bijvoorbeeld chronisch hartfalen. Ook binnen één diagnose zoals COPD kan men grote verschillen verwachten afhankelijk van de ernst. Bijvoorbeeld een patiënt met een lichte vorm van COPD (ernstgradatie: Gold 1) of een patiënt met een zeer ernstige vorm (Gold 4) zullen wezenlijk andere klachten ervaren tijdens rust of lichte inspanning.

Aangezien de Monitor een beleidsinstrument is dat verdere verdieping van de cijfers niet toelaat, is er nader onderzoek nodig om na te gaan welke mensen met welke diagnoses het meeste risico lopen op een lichamelijk inactieve leefstijl. Ook is nader onderzoek gewenst naar een verdere specificatie van de beweegnormen voor mensen

met chronische aandoeningen. Het is vooralsnog niet duidelijk of de mensen die niet aan de normen voldoen deze wel zouden kunnen behalen.

Ondanks deze hiaat in de kennis over welke hoeveelheid lichamelijke activiteit verantwoord is voor subgroepen van chronisch zieken lijkt de grootste gezondheidswinst behaald te kunnen worden door het activeren van inactieve mensen met chronische aandoeningen. Er wordt dan ook aanbevolen om bewegingsstimuleringsactiviteiten voor chronisch zieken specifiek te richten op de inactieve chronisch zieken

Verder wordt aanbevolen om bij evaluaties van interventies en beleidsmaatregelen ter bevordering van het beweeggedrag van chronisch zieken naast de beweegnormen ook standaard inactiviteit als uitkomstmaat in beschouwing te nemen.

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B.4 Factsheet Jeugd NOT

Drs. S.I. de Vries
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Onderwerp

Jeugd en Bewegen in Nederland

Nederlandse Norm Gezond Bewegen (NNGB)

Voor jeugdigen (5 t/m 18 jaar) wordt dagelijks tenminste 60 minuten matig intensieve lichamelijke activiteit aanbevolen; bovendien dienen de activiteiten minimaal tweemaal per week gericht te zijn op het verbeteren en handhaven van de lichamelijke fitheid (Kemper et al., 2000).

Bij het toetsen van het al dan niet voldoen aan de NNGB wordt veelal alleen rekening gehouden met het eerste deel: alle dagen van de week tenminste 60 minuten matig intensieve lichamelijke activiteit per dag.

Er wordt daarbij onderscheid gemaakt tussen kinderen die normactief, semi-actief, semi-inactief en inactief zijn.

Normactief: 7 dagen x 60 minuten / dag

Semi-actief: 5, 6 dagen x 60 minuten / dag

Semi-inactief: 3, 4 dagen x 60 minuten / dag

Inactief: 0, 1, 2 dagen x 60 minuten / dag

Fitnorm

Tot op heden is er geen aparte fitnorm voor jeugdigen opgesteld. Binnen de NNGB zit een soort van 'fitnorm' ingebouwd: minimaal tweemaal per week dienen de activiteiten gericht te zijn op het verbeteren en handhaven van de lichamelijke fitheid. Bij deze 'fitnorm' is naast de frequentie echter geen tijdsduur vastgesteld.

De fitnorm voor volwassenen beveelt minimaal driemaal per week 20 minuten zwaar intensieve lichamelijke activiteiten aan.

Combinorm

Iemand voldoet aan de zogeheten combinorm als hij of zij voldoet aan de NNGB en/of aan de fitnorm. Door het ontbreken van fitnorm voor jeugdigen wordt er tot op heden niet of nauwelijks gewerkt met de combinorm bij jeugdigen.

Norm voor sedentair gedrag (zittende activiteiten)

De mate waarin kinderen en jongeren naar TV/ DVD/ video kijken en achter de computer zitten gaat ten koste van andere activiteiten en heeft een ongunstige invloed op het ontwikkelen van overgewicht. Deze vormen van inactiviteit dienen beperkt te worden tot maximaal twee uur per dag. Deze norm is opgesteld door de American Academy of Pediatrics (2001) en de National Association for Sport and Physical Education (2004) en overgenomen door TNO Kwaliteit van Leven en het Kenniscentrum Overgewicht (o.a. in het Overbruggingsplan voor kinderen met overgewicht).

Kinderen t/m 11 jaar (basisschool)

Percentage kinderen dat de NNGB haalt

Hieronder worden vier tabellen weergegeven om een indruk te geven van het percentage kinderen uit het reguliere basisonderwijs dat de NNGB haalt, aan sport doet, een zwemdiploma heeft of op zwemles zit en het percentage kinderen dat meer dan twee uur per dag TV/DVD/video kijkt of achter de computer zit.

Tabel A Percentage kinderen uit het reguliere basisonderwijs dat de NNGB haalt.

	% inactief	% semi-inactief	% semi-actief	% normactief
<i>Bruil et al., 2004</i>				
Onderbouw	5	10	13	72
Middenbouw	1	7	10	83
Bovenbouw	1	5	8	86
<i>De Vries et al., 2005</i>				
6 t/m 11 jaar	45	35	17	3
<i>Zeijl et al., 2005</i>				
8 t/m 12 jaar	21	33	26	20
<i>Vogelsang et al., 2006</i>				
Bovenbouw	0	1	2	97

Bruil et al., 2004; zelfgerapporteerde data, 2003, n = 4.044, 26 scholen, 6% allochtoon.

De Vries et al., 2005; zelfgerapporteerde data, 2005, n = 521, 20 scholen, 49% allochtoon.

Zeijl et al., 2005; zelfgerapporteerde data, n = 1.037.

Vogelsang et al., 2006; zelfgerapporteerde data, 2006, n = 823.

Onderbouw = groep 1, 2; middenbouw = groep 3 t/m 5; bovenbouw = groep 6 t/m 8.

Uit tabel A blijkt dat er een enorm verschil is tussen de vier onderzoeken. Uit onderzoek van De Vries et al. (2005) komt naar voren dat slechts drie procent van de kinderen aan de NNGB voldoet. Het ging hier om stadskinderen uit stadsvernieuwingswijken. Uit onderzoek van Zeijl et al. (2005) komt naar voren dat 20% van de 8-12 jarigen aan de NNGB voldoet. In het onderzoek van Bruil et al. (2004) en Vogelsang et al. (2006) is daarentegen gevonden dat 80%, respectievelijk 97% van de basisschoolleerlingen de NNGB haalt. Dit hangt samen met de manier waarop het bewegen is uitgevraagd aan de kinderen. In het onderzoek van Zeijl et al. (2005) is de vraag gesteld 'Hoe vaak per week doe je tenminste een uur aan lichaamsbeweging?'. In het onderzoek van Bruil et al. (2004) en Vogelsang et al. (2006) is op basis van vragen over transport, schoolsport, sport en buitenspelen nagegaan of een kind al dan niet aan de NNGB voldoet. Deze vragen zijn ook wel bekend onder de naam Standaardvraagstelling Bewegen Jeugd uit de Lokale en Nationale Monitor Jeugdgezondheid. Het onderzoek van De Vries et al. (2005) is gebaseerd op een beweegdagboekje dat de kinderen samen met hun ouders 7 dagen bijhielden.

Bovengenoemde kan nader geïllustreerd worden met het onderzoek van Hekkert et al. (2007). In dit onderzoek onder kinderen van 7 t/m 9 jaar (groep 4 van het basisonderwijs) is gebruik gemaakt van drie verschillende methoden om na te gaan of een kind al dan niet aan de NNGB voldoet: een objectieve meting met behulp van een beweegmeter (ActiGraph), de vraag zoals gesteld in OBIN 'Hoeveel dagen per week in de ZOMER heb je tenminste 60 minuten per dag zulke lichaamsbeweging' (met nadere

toelichting voor 'zulke'; idem voor WINTER) en de Standaardvraagstelling Bewegen Jeugd.

Tabel B Percentage kinderen uit groep 4 van het reguliere basisonderwijs dat de NNGB haalt, op basis van de gebruikte methode (Hekkert et al., 2007).

	% inactief	% semi-inactief	% semi-actief	% normactief
Hekkert et al., 2007				
Bewegmeter	100	0	0	0
OBiN-vraag	20	34	36	11
Standaard vraagstelling Bewegen Jeugd	2	2	9	88

Hekkert et al., 2007; n=73; 2 scholen; 49% allochtoon

Sportdeelname onder kinderen

Kinderen in de leeftijd van 6 t/m 11 jaar nemen bijna allemaal deel aan sport (93%) en zo'n 74% is lid van een sportvereniging (Tabel C). Het merendeel (69%) van de kinderen in de leeftijd van 0 t/m 11 jaar sport gemiddeld 1-4 uur per week (Tabel C). Zestien procent van de 0 t/m 11 jarigen geeft aan zelfs meer dan 5 uur per week te sporten (Tabel C).

Tabel C Percentage kinderen dat aan sport doet.

	% deelname aan sport	% lid van een sportvereniging	% 1-4 uur/wk	% >5 uur/wk
CBS, 2003				
0 t/m 11 jaar			69	16
Zeijl et al., 2005				
8 t/m 12 jaar		77		
SCP, 2006				
6 t/m 11 jaar	93	74		

CBS, gegevens 2003

Zeijl et al., 2005; zelfgerapporteerde data, n = 1.037

SCP, 2006; zelfgerapporteerde data, AVO, 2003

Vooraf kinderen uit de middenbouw en bovenbouw zijn in het bezit van een zwemdiploma. Het percentage kinderen dat op zwemles zit is juist hoger in de onderbouw dan in de middenbouw en bovenbouw van de basisschool (Tabel D).

Tabel D Percentage kinderen dat een zwemdiploma heeft of op zwemles zit.

	% zwemdiploma	% zwemles
Bruil et al., 2004		
Onderbouw	5	35
Middenbouw	64	25
Bovenbouw	87	5

Bruil et al., 2004; zelfgerapporteerde data, n = 4.044, 26 scholen, 6% allochtoon.

Sedentair gedrag (zittende activiteiten) onder kinderen

In tabel E wordt een overzicht gegeven van het percentage kinderen dat meer dan 2 uur per dag TV, DVD en/of video kijkt of achter de computer zit. Het blijkt dat het percentage kinderen dat meer dan 2 uur tv kijkt per dag toeneemt naarmate de kinderen ouder worden. Hetzelfde geldt voor het gebruik van de computer. In totaal wordt door 55% van de basisschoolkinderen meer dan 10 uur per week televisie gekeken.

Tabel E Percentage kinderen dat meer dan 2 uur per dag TV/ DVD/ video kijkt of achter de computer zit.

	% > 2 uur/dag TV	% > 2 uur/dag PC	% > 10 uur/wk TV
Renders et al., 2004			
			55
Bruil et al., 2004			
Onderbouw	14	1	
Middenbouw	18	2	
Bovenbouw	26	11	

Bruil et al., 2004; zelfgerapporteerde data, n = 4.044, 26 scholen, 6% allochtoon.

Renders et al., 2004; zelfgerapporteerde data

In de OBiN monitor zijn in 2006 voor het eerst ook kinderen van 4 t/m 11 jaar meegenomen (Tabel F).

Tabel F Percentage kinderen (4 t/m 11 jaar) dat inactief is, en dat voldoet aan de onderscheiden 60 minuten normen, 2006 (gebaseerd op telefonische interviews met de ouders).

Jaar	% inactief	% NNGB	% fitnorm	% combinorm
2006	9	35	32	54

OBiN, nog niet gerapporteerde data

Jongeren 12 t/m 17 jaar (voortgezet onderwijs)

Percentage jongeren dat de NNGB haalt

Ruim een kwart van de jongeren voldoet aan de NNGB (CBS, 2007). Uit de Monitor Bewegen en Gezondheid 2005, onderdeel van de Monitor Ongevallen en Bewegen in Nederland (OBiN), blijkt een hoger percentage jongeren aan de norm te voldoen. Hier is echter gebruik gemaakt van de 30 minuten norm voor volwassenen en niet van de 60 minuten norm voor jeugd (Tabel G).

Tabel G Percentage jongeren (12 t/m 17 jaar) dat de NNGB haalt.

	% normactief
CBS, 2007	26
OBiN, 2007	33

CBS, 2007; gegevens POLS 2006;

OBiN, 2007; zelfgerapporteerde data, 2005, N.B. Er is uitgegaan van de 30 minuten norm voor volwassenen in plaats van de 60 minuten norm voor jeugd.

In OBiN 2000-2006 is bij het in kaart brengen van het beweeggedrag van jongeren uitgegaan van 30 minuten per dag matig intensieve lichamelijke activiteit (Tabel H). Ten opzichte van de formele norm van 60 minuten per dag leveren de gegevens dan ook een gunstiger beeld van het aantal jongeren dat aan de NNGB en combinorm voldoet. In 2006 is ook de norm van 60 minuten gehanteerd, welke voor 2006 in Tabel J is weergegeven. De fitnorm is in beide tabellen identiek.

Tabel H Percentage jongeren (12 t/m 17 jaar) dat inactief is, en dat voldoet aan de onderscheiden 30 minuten normen, 2000-2006 (gebaseerd op telefonische interviews).

Jaar	% inactief	% NNGB	% fitnorm	% combinorm
2000	3	26	32	36
2001	2	26	36	48
2002	2	20	32	41
2003	1	23	34	46
2004	2	29	36	51
2005	2	33	36	56
2006	0	31	33	53

OBiN, 2007 (data 2006 nog niet eerder gerapporteerd)

Het percentage jongeren dat op geen enkele dag per week minimaal 30 minuten matig lichamelijk actief is, varieert over de jaren maar is laag te noemen. In 2006 is een zeer laag percentage van 0,4% gemeten. Het percentage jeugdigen (12 t/m 17 jarigen) dat aan de 30 minuten norm voldoet geeft een sterk wisselend beeld over de jaren, en overstijgt slechts vanaf 2005 de 30%. Het percentage jongeren dat aan de fitnorm voldoet is stabiel: ongeveer eenderde van de jongeren van 12 t/m 17 jaar. Het percentage jongeren dat aan de 30 minuten combinorm voldoet stijgt van 36% in 2000 tot bijna 56% in 2005. In 2006 ligt het percentage op 53%. Of hier sprake is van een dalende trend zullen vervolgmetingen moeten uitwijzen.

Tabel J Percentage jongeren (12 t/m 17 jaar) dat inactief is, en dat voldoet aan de onderscheiden 60 minuten normen, 2006 (gebaseerd op telefonische interviews).

Jaar	% inactief	% NNGB	% fitnorm	% combinorm
2006	18	20	33	48

OBiN, nog niet gerapporteerde data

Het percentage inactieve jongeren volgens de formele norm voor jeugd, 0-2 dagen tenminste 60 minuten matig intensieve lichamelijke activiteit is maar liefst 18% in 2006. Het percentage jongeren dat in 2006 aan de 60 minuten norm voldoet is slechts 20%. Het percentage jongeren dat aan de 60 minuten combinorm voldoet is 48% in 2006. Vergelijken we deze percentages met die onder de kinderen van 4 t/m 11 jaar, dan zien we onder de jongeren een negatiever beeld dan onder de kinderen.

Sportdeelname onder jongeren

De helft (53%) van de jongeren in de leeftijd van 12 t/m 17 jaar geeft aan 1 tot 4 uur per week aan sport te doen (Tabel K). Ruim een derde (34%) sport meer dan 5 uur per week. Een groot deel van de jongeren van 12 t/m 19 jaar neemt deel aan sport (90%) en zo'n 71% is lid van een sportvereniging (Tabel K).

Tabel K Percentage jongeren dat aan sport doet.

	% deelname aan sport	% lid van een sportvereniging	% 1-4 uur/wk	% >5 uur/wk
CBS, 2003				
12 t/m 17 jaar			53	34
SCP, 2006				
12 t/m 19 jaar	90	71		

SCP, 2006; zelfgerapporteerde data, AVO, 2003.

Geadviseerde meetmethode

Bij bovengenoemde overzichten moet de kanttekening geplaatst worden dat het hier bij alle onderzoeken om zelfgerapporteerde data gaat. Hierdoor kunnen de weergegeven percentages een onder- dan wel overschatting zijn.

In 2003 is door De Vries et al. (De Vries et al., 2003) een literatuurstudie uitgevoerd naar objectieve en subjectieve meetmethoden in binnen- en buitenland om fysieke activiteit bij kinderen en adolescenten (4-18 jaar) te meten. Hoewel er veel hartslagmeters, stappentellers en versnellingsmeters op de markt zijn, is er weinig onderzoek gedaan naar de validiteit en betrouwbaarheid van deze meetmethoden bij kinderen en adolescenten. Ook zijn er op dit moment geen valide en betrouwbare Nederlandse vragenlijsten beschikbaar voor kinderen en adolescenten. Aangezien elke methode net weer andere aspecten meet, lijkt een combinatie van, zo mogelijk betrouwbare en gevalideerde, objectieve en subjectieve meetmethoden op dit moment het meest geschikt. Men kan hierbij denken aan de combinatie van een versnellingsmeter en een vragenlijst.

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B.5 Reliability OBiN - Squash concept

Reliability and agreement of two Dutch questionnaires on physical activity: the SQUASH and OBiN

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Abstract

Objective: The first objective of this study was to assess the test-retest reliability of the SQUASH and OBiN questionnaire. The second objective was to compare both questionnaires on whether they agree on measuring the physical activity level of Dutch residents and whether the residents meet the 'Dutch healthy physical activity guideline' (NNGB).

Methods: The test-retest reliability of both questionnaires was assessed with an in-between period of approximately 3 weeks. These data (22 men and 31 women) were analyzed with the proportion of agreement between the two measurements. In the 'Dutch National Monitor on Muscular Complaints' consisting of 6,830 participants (3,340 men and 3,489 women), respondents were asked to fill out the SQUASH and OBiN questionnaires. These data were analyzed with the Pearson Chi-square test and a weighted kappa.

Results: The SQUASH and OBiN separately produced reliable data with proportion of agreement of 87% and 80% in that same order. The participants that were classified in the norm-activity categories inactive, semi active or norm active with the SQUASH differed significantly from the classification with that obtained by the OBiN questionnaire, $X^2(4, N = 6,723) = 664.52, p < 0.001$. The proportion of agreement for both questionnaires was 59% with a weighted kappa of 0.26.

Conclusion: The SQUASH and OBiN separately can be considered as highly reliable instruments to measure trends in physical activity levels. However, both questionnaires differ significantly from each other, and comparing outcomes have to be done with caution.

Keywords: Agreement; Guideline; Physical activity; Questionnaires; Reliability

1. Introduction

Epidemiologic research has revealed preventive effects of physical activity on the risk of developing chronic diseases such as coronary heart disease, hypertension, diabetes mellitus, osteoporosis, colon cancer, anxiety and depression (1-6). Several studies have shown that almost half of the Dutch population is not physically active enough to improve their health (7;8). To increase awareness of this health problem a national consensus meeting was organized in 1998 entitled: 'The Netherlands physically active!' A number of experts from several Dutch universities, research institutes, the government and the Dutch Olympic Committee were consulted which resulted in a recommendation for the daily amount of physical activity: the 'Dutch healthy physical activity guideline' (NNGB) (7), the Fitness norm (9), and the 'Dutch combination physical activity guideline' (the Combination norm) (7). These guidelines are in detail listed in Box 1.

To improve the activity behaviour of Dutch residents, the Dutch government developed several policy aims. The two most important ones on physical activity are a) at least 65% (in 2004 60%) of the Dutch mature residents meet the 'Dutch combination physical activity guideline' in 2010, and b) the part of the mature residents who do not meet the 'Dutch combination physical activity guideline' has to be reduced from 8% to 7% in 2010 (10).

To assess whether Dutch residents meet the NNGB, two monitors are performed yearly. One of the monitors is the 'Permanent Research of the Living-situation (POLS) module survey which includes the Short QuesTionnaire to ASsess Health-enhancing physical activity (SQUASH). This monitor revealed that the activity pattern of the Dutch people had not changed over the period 2000 until 2004. The percentage of norm active persons was 53% throughout that period (11). The second monitor is the 'Monitor Physical activity and Health' (12). This monitor uses the 'Injuries and Physical activity in the Netherlands (OBiN) questionnaire and revealed that the percentage of norm active persons had increased from 44,2% in 2000 to 50,7% in 2004 (10).

We designed a test-retest reliability study to assess whether both questionnaires used in the two national monitors, are reliable instruments. We also aimed to investigate whether both questionnaires are similar in classifying respondents in the norm-activity categories inactive, semi active or norm active related to the 'Dutch healthy physical activity guideline' (NNGB).

2. Methods

2.1. Study population test-retest reliability

The sample size for the test-retest reliability was calculated at 350 random selected persons with an expected response rate of 20%. Respondents were randomly selected using the telephone guides of four cities in The Netherlands: Leiden, Mijdrecht, Vinkeveen and Wilnis. On the first measure, 352 respondents received the questionnaire. From the first sending, 73 participants completed the questionnaire which corresponds to a 20% response rate. The 73 participants received the questionnaire for a second time after a period of approximately three weeks. This period was assumed to be long enough to rule out a possible recall bias, but short enough to assume that the activity pattern of respondents had not changed. A total of 53 participants (15% response rate of the total sample population) returned the questionnaire both times, and therefore were included in test-retest study.

The average age of the test-retest study population was 54 years and about 59% of the population was women. Approximately 36% of the population had followed elementary school (or no education) to middle vocational education. Approximately 64% had followed high school or higher education (53% followed college or university). Approximately 65% of the study population is employed.

2.2. Study population agreement

To assess the agreement between the SQUASH and the OBiN the data of the 'Dutch National Monitor on Muscular Complaints (NPB) 2006' were used in which both questionnaires were assessed. The data of this monitor can be considered as a representative sample of the total Dutch adult population of 20 years and older (13). The average age of this study population was 50 years and about 51% of the population was women. Approximately 53% of the population had followed elementary school (or no education) to middle vocational education. Approximately 47% had followed high school or higher education (36% followed college or university). Approximately 62% of the population was employed.

2.3. The SQUASH and OBiN questionnaires

The SQUASH and OBiN questionnaires are both "self-administered questionnaires" and collect data on physical activity behaviour of Dutch residents.

This behaviour is measured using standard questions based on the 'Dutch healthy physical activity guideline' (NNGB), the Fitness norm and the Combination norm (8). These definitions are explained in Box 1.

The OBiN consists of questions on how many days the participant is physically active for 30 minutes or more per day in the summer and in the winter. The activities concern all physical activities performed by the respondents which are at least as intense as intensive walking or bicycling (moderate intensive activities) (10;12;13).

The SQUASH consists of questions on frequency (days per week) and duration (time per day) of the respondents physical activity pattern in the last week. The questions are referring to daily activities in relation to occupation, leisure time (e.g. sport activities and gardening), household, and transportation means (e.g. bicycling and walking to work) (13;14).

2.4. Study design and norm-activity categories

In the SQUASH questionnaire several activities were assessed (e.g. walking, bicycling, gardening). According to the compendium of Ainsworth all activities can be given MET values in relation to the intensity level of these activities (15). This was applied in this study. However, in this study a different question on sport was used than used in the standard SQUASH questionnaire (14). Therefore, we had to define a MET score by taking the average MET value of all MET values given for the sport activities mentioned in the compendium of Ainsworth (15) (73 different sports in total). This resulted in a MET value of 5.5 for sport, used in this study.

The test-retest reliability comparison between the first and second measurement was assessed with an in-between period of three weeks. An additional question was inserted at the second measurement which asked if the activity pattern of respondents had changed between the first and second measurement.

To compare both questionnaires, outcomes were structured in three norm-activity categories:

- Inactive: no moderate intensive physical activity on any day in summer and in the winter, or less than 30 minutes per week physically active;
- Semi active: physically active for one to four days in summer and in the winter, or more than thirty minutes but less than 150 minutes per week physically active;

- Norm active: physically active for five days or more in summer and in the winter, or more than 150 minutes per week physically active.

The cut-off points that were used differed per age as can be seen in Box 1. Table 1 shows which activities were included per age category (for the SQUASH questionnaire).

To be able to compare outcomes of this study with other studies, we used the same assumption on missing answers as used in the study of Wendel-Vos et al. (14). In that study, it was assumed that if participants left days per week blank but did fill in minutes per day active, that particular activity would be performed for at least one day per week. If participants did not fill in the minutes per day active, but did fill in the days per week, the median value of the total study population of the minutes per day spent on activity was used.

2.5. Statistical analyzes test-retest reliability

To assess the reliability of the SQUASH and OBiN, the proportion of agreement was assessed for the overall agreement between the two measurements with both questionnaires separately.

2.6. Statistical analyzes agreement

To analyze if the SQUASH and OBiN questionnaires are similar in classifying respondents in the norm-activity categories, a Pearson Chi-square test was performed. The degree of agreement between both questionnaires was indicated by the weighted kappa. Kappa lies between the zero (no agreement) and one (total agreement). A Kappa between 0.4 and 0.75 indicates an average agreement. If K is > 0.75 , there is strong agreement and if K is < 0.4 , there is weak to no agreement (16;17).

4. Results

4.1 Test-retest reliability

The results of the data analyzes on the test-retest reliability study are shown in table 2a (SQUASH) and 3a (OBiN). For the test-retest study the categories inactive and semi active were combined in two categories due to small numbers in the inactive and semi active categories. Therefore, the categories not norm active and norm active were used. At the first measurement with the SQUASH 86.8% of the

population was norm active, and 88.7% at the second measurement. Exact agreement between the first and second measurements was 86.8% when using the SQUASH (95% CI 74.1 - 94.1). Exact agreement between men was 77.3% (95% CI 54.2 - 91.3%) and 93.6% (95% CI 77.2 - 98.9) between women. For the age category 18-55 years exact agreement was 84.0% (95% CI 63.1 - 94.8), and for the category 55 years and older 89.3% (95% CI 70.6 - 97.2). For more results on other characteristics, see table 2b.

At the first measurement with the OBiN 62.7% of the respondents was norm active, and 58.8% at the second measurement. Exact agreement between both measurements was 80.4% (95% CI 66.5 - 89.7). Exact agreement in men was 85.7% (95% CI 62.6 - 96.2) and 76.7% (95% CI 57.3 - 89.4) in women. For the age category 18-55 years exact agreement was 70.8% (95% CI 48.8 - 86.6) and for the category 55 years and older 88.9% (95% CI 69.7 - 97.1). For more results on other characteristics, see table 3b.

An additional question was added to the questionnaire sent to respondents at the second measurement. Results of this questions showed that four respondents (7.7%) had increased their activity pattern between the first and second measurement. Six respondents (11.5%) decreased their activity pattern and forty two respondents (80.8%) remained at the same level.

4.2 Agreement

The results of the data analyses on the data of the 'Dutch National Monitor on Muscular Complaints' (NPB) 2006' are shown in table 4a. According to the SQUASH 74% of the population was norm active, whereas according to the OBiN 58% was norm active. The participants that were classified in the three norm-categories (inactive, semi active and norm active) using the SQUASH differed significantly from that obtained by the OBiN, $X^2(4, N = 6723) = 664.52, p < 0.001$. When comparing the SQUASH with the OBiN, exact agreement was 58.8% (95% CI 57.6 - 60.0). The weighted kappa for this agreement was 0.26 (95% CI 0.24 - 0.28). Exact agreement in men was 57.6% ($K_w = 0.26$, 95% CI 0.24 - 0.28) and in women 60.0% ($K_w = 0.26$, 95% CI 0.23 - 0.28). For the age category 18-55 years, exact agreement was 57.5% ($K_w = 0.25$, 95% CI 0.23 - 0.27) and for the category 55 years and older 60.9% ($K_w = 0.27$, 95% CI 0.23 - 0.30). For all other results per characteristic, see table 4b.

5. Discussion

The first objective of our study was to assess the test-retest reliability of the SQUASH and OBiN questionnaires. Our study has revealed that both the SQUASH and OBiN are highly reliable instruments in assessing the physical activity level over a certain time period. These findings support the results of another study performed on only the SQUASH (14). Our study is the first to assess the reliability of the OBiN. Therefore these results cannot be compared to other studies performed on the OBiN. However, our findings are comparable to other physical activity questionnaires (18-23).

The results might have been influenced by recall bias. Respondents might have remembered what they filled out at the first time, which could have influenced the second measurement. It is also possible that the physical activity behaviour of the respondents had changed between the first and second measurement. Results on the additional question revealed that approximately 19% of the population had changed their activity behaviour in the three weeks between the first and second measurement. This might lead to an underestimation of the results (24).

The second objective of this study was to compare both questionnaires to each other to analyze whether the SQUASH and OBiN are similar in assessing the physical activity behaviour of Dutch residents and whether these residents meet the 'Dutch healthy physical activity guideline' (NNGB). We found that both questionnaires differ significantly from each other in classifying participants in the norm-activity categories. The proportion of agreement between both questionnaires was 59% which indicates an average agreement. However, the weighted kappa for this agreement was only 0.26 which is rather low. Our study is the first to assess similarity between the SQUASH and OBiN and therefore is unique, and results cannot be compared to that of other studies.

An explanation for the fact that the OBiN and SQUASH showed significant differences is that the SQUASH seems to reach a so called 'ceiling effect'. This means that the majority of scores are at or near the maximum possible for the questionnaire which gives two limitations. First, the SQUASH fails to discriminate between people scoring at the top ('the ceiling') of the questionnaire (in this case, the people who are classified in the norm active category). Second, the data of the SQUASH were not distributed normally due to this ceiling effect, therefore giving limitations to the possibility of finding effects (e.g. low weighted kappa value)

while most statistical procedures demand normal distributed data. However, it is also possible that the OBiN is too strict in classifying people in the norm-activity categories making it therefore difficult to reach the 'Dutch healthy physical activity guideline'.

Other limitations also need to be considered. Firstly, recall bias might have affected the results. The SQUASH questionnaire consisted of questions on several activities which might have been performed in the past week. Activities which are performed every day (e.g. household activities), or on the same day every week (e.g. sport activities) are easier to recall than activities that are performed sometimes in leisure time (e.g. gardening) (25-27). For the OBiN questionnaire, only two questions are used to measure whether people meet the 'Dutch healthy physical activity guideline'. These two questions ask for how many days a person was physically active in the summer and in the winter for at least 30 minutes a day. The summer and winter are large time periods to reconsider which makes it difficult to remember how many days a person was active. Secondly, the results showed that both questionnaires differed significantly from each other. However, we are unable to conclude which questionnaire is better to use. Therefore, it would be recommended to validate both questionnaires first.

Conclusion

In conclusion, both instruments are highly reliable and can be used as reliable instrument to measure trends in physical activity levels of Dutch residents. However, both questionnaires differ significantly from each other. Comparing outcomes of both questionnaires therefore have to be done with caution.

Acknowledgement

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Box 1**Definitions of the Dutch physical activity guideline, the Fitness norm and the Combination norm (source: TNO/RIVM)****Inactivity**

Not moderate intensive physical active for at least 30 minutes on any day in summer and winter.

Dutch healthy physical activity guideline (NNGB) (7)

- Youth (younger than 18 years)

Daily one hour moderate intensive physically active (>5 MET*) (for instance aerobics or skateboarding) until 8 MET (for instance running 8 km/hour)) by which at least two times per week the activities are aimed on improving or maintaining physical fitness (power, agility and co-ordination).

- Adults (18-55 year)

Daily at least a half hour moderate intensive physically active (between the 4 and the 6.5 MET*), at least 5 days per week. Moderate intensive means for example sturdily walking (5 km/hour) or riding a bicycle (16 km/hour).

- 55 years and older

A half hour moderate intensive physically active (between the 3 and 5 MET*) on at least 5, but preferably all days of the week. Moderate intensively means for instance walking in a tempo of 4 km/hour or riding a bicycle with a speed of 10 km/hour. For non-active persons, with or without limitations, every extra quantity physical exercise is meaningful independent of intensity, duration, frequency and type.

Fitness norm (9)

At least three times per week during a minimum of 20 minutes (connected) being heavily intensive active.

Combination norm (7)

This is a combination of both above mentioned norms. A person satisfies to the combination norm when he/she satisfies at least to one of both norms.

* 1 MET agrees with energy expenditure during rest metabolism. 3 MET agrees with an energy expenditure of 3 times the rest metabolism.

Table 1**The activities per age category included.**

	18-55	55+
Walking to work/school (3.5 MET*)		X
Bicycling to work/school (5.0 MET)	X	X
Light activity at work/school (2.5 MET)		
Intense activity at work/school (4.0 MET)	X	X
Light household work (2.5 MET)		
Intense household work (4.5 MET)	X	X
Walking in leisure time (3.5 MET)		X
Bicycling in leisure time (5.0 MET)	X	X
Gardening (5.0 MET)	X	X
Odd jobs (3.0 MET)		X
Sports (5.5 MET)	X	X

* 1 MET agrees with energy expenditure during rest metabolism. 3 MET agrees with an energy expenditure of 3 times the rest metabolism.

Table 2a**Test-retest reliability of the SQUASH**

Total population		Second measure			Proportion of agreement	95% CI
		Not norm active (%)*	Norm active (%)	Total (%)	86.8	74.1 - 94.1
First measure	Not norm active	3 (5.7)	4 (7.5)	7 (13.2)		
	Norm active	3 (5.7)	43 (81.1)	46 (86.8)		
	Total	6 (11.3)	47 (88.7)	53 (100)		

* Percentage of total population

Table 2b**Test-retest reliability of the SQUASH per characteristic**

Characteristic	Population	Proportion of Agreement*	95% CI
Male	22	77.3	54.2 - 91.3
Female	31	93.6	77.2 - 98.9
18-55 years	25	84.0	63.1 - 94.8
55 years and older	28	89.3	70.6 - 97.2
Elementary school (or no education) to middle vocational education	19	89.5	65.5 - 98.2
High school to college/university	34	85.3	68.2 - 94.5
Employed	34	82.4	64.8 - 92.6
Retired	17	94.1	69.2 - 99.7

* Between the two measurements

Table 3a**Test-retest reliability of the OBiN**

Total population		Second measure			Proportion of agreement	95% CI
		Not norm active (%)*	Norm active (%)	Total (%)	80.4	66.5 - 89.7
First measure	Not norm active	15 (29.4)	4 (7.8)	19 (37.3)		
	Norm active	6 (11.8)	26 (51.0)	32 (62.7)		
	Total	21 (41.2)	30 (58.8)	51 (100)		

* Percentage of total population

Table 3b**Test-retest reliability of the OBiN per characteristic**

Characteristic	Population	Proportion of agreement*	95% CI
Male	21	85.7	62.6 - 96.2
Female	30	76.7	57.3 - 89.4
18-55 years	24	70.8	48.8 - 86.6
55 years and older	27	88.9	69.7 - 97.1
Elementary school (or no education) to middle vocational education	18	72.2	46.4 - 89.3
High school to college/university	33	84.9	67.3 - 94.3
Employed	33	78.8	60.6 - 90.4
Retired	16	81.3	56.7 - 95.0

* Between the two measurements

Table 4a**Agreement between the SQUASH and OBiN**

		OBiN				$K_w^{#2}$	0.95 CI	$P^{#3}$	95% CI
		Inactive (%) ^{#1}	Semi active (%)	Norm active (%)	Total (%)	0.26	0.24 - 0.28	58.8	57.6 - 60.0
SQUASH	Inactive (%) ^{#1}	97 (1.4)	235 (3.5)	173 (25.7)	505 (7.5)				
	Semi active (%)	58 (0.8)	649 (9.7)	514 (7.6)	1221 (18.2)				
	Norm active (%)	74 (1.1)	1717 (25.5)	3206 (47.7)	4997 (74.3)				
	Total (%)	229 (3.4)	2601 (38.7)	3893 (57.9)	6723 (100)				

^{#1} Percentage of total population^{#2} Weighted kappa^{#3} Proportion of agreement**Table 4b****Agreement between the SQUASH and OBiN per characteristic**

Characteristic	Population	$K_w^{#1}$	.95 CI	$P^{#2}$	95% CI
Male	3298	0.26	0.24 - 0.28	57.6	55.8 - 59.2
Female	3424	0.26	0.23 - 0.28	60.0	58.4 - 61.7
18-55 years	4157	0.25	0.23 - 0.27	57.5	56.0 - 59.0
55 years and older	2567	0.27	0.23 - 0.30	60.9	58.9 - 62.7
Elementary school/ no education	308	0.36	0.24 - 0.47	54.2	48.5 - 59.9
Low vocational education	967	0.26	0.20 - 0.62	61.8	58.7 - 64.9
Middle vocational education	2243	0.22	0.20 - 0.24	58.9	56.8 - 60.9
High school	686	0.20	n.c.*	56.7	55.9 - 60.4
College/university	2429	0.27	0.24 - 0.29	58.7	56.7 - 60.7
Employed	4097	0.24	0.23 - 0.25	58.0	56.5 - 59.5
Retired	1227	0.24	0.20 - 0.28	62.3	69.6 - 65.1
Social payment/unemployed	167	0.27	0.10 - 0.43	50.3	42.5 - 58.1
Workers' disability	319	0.36	0.24 - 0.48	56.7	51.1 - 62.2
Fulltime housewife/houseman	564	0.20	0.15 - 0.26	60.8	56.6 - 64.8
Following education/studying	154	0.21	0.19 - 0.24	53.9	45.7 - 61.9

* Not calculated while a substantial proportion of zeros are included in the crosstab table

^{#1} Weighted kappa between the SQUASH and OBiN^{#2} Proportion of agreement between the SQUASH and OBiN

B.6 ACSM 2007 Physical Activity Guideline information



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**PHYSICAL ACTIVITY AND PUBLIC HEALTH GUIDELINES
FREQUENTLY ASKED QUESTIONS AND FACT SHEET
PHYSICAL ACTIVITY FOR THE HEALTHY ADULT**

WHAT IS THE CORE RECOMMENDATION OF THE ACSM/AHA PHYSICAL ACTIVITY GUIDELINES?

To promote and maintain health, all healthy adults aged 18 to 65 years need moderate-intensity aerobic (endurance) physical activity for a minimum of 30 minutes on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 minutes on three days each week.

*Do moderately intense cardio 30 minutes a day, 5 days a week.
Or, do vigorously intense cardio 20 minutes a day, 3 days a week.
Do 8-10 strength training exercises, 8-12 repetitions of
each exercise twice a week*

The preventive recommendation specifies how adults, by engaging in regular physical activity, can promote and maintain health, and reduce risk of chronic disease and premature mortality.

WHAT KIND OF PHYSICAL ACTIVITY MEETS THIS RECOMMENDATION?

Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. For example, a person can meet the recommendation by walking briskly for 30 minutes twice during the week and then jogging for 20 minutes on two other days. Moderate-intensity aerobic activity, which is generally equivalent to a brisk walk and noticeably accelerates the heart rate, can be accumulated toward the 30-minute/day minimum by performing bouts each lasting 10 or more minutes.

Vigorous-intensity activity is exemplified by jogging, and causes rapid breathing and a substantial increase in heart rate. In addition, every adult should perform activities that maintain or increase muscular strength and endurance a minimum of two days each week.

WHY ARE PHYSICAL ACTIVITY GUIDELINES BEING UPDATED?

This is an update from the 1995 Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) public health recommendation that "Every U.S. adult should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week."

While the recommendation remains fundamentally unchanged, more than 10 years have passed since it was issued. New science has added to our understanding of the biological mechanisms by which physical activity provides health benefits and the physical activity profile (type, intensity, amount) that is associated with enhanced health and quality of life. This publication reflects a review of evidence published since the issuance of the CDC/ACSM recommendation in 1995 and considers key issues not fully clarified in the original recommendation.

Specifically, it is an update and clarification of the 1995 recommendations on the types and amounts of physical activity needed by healthy adults to improve and maintain health. The intent is to provide a more comprehensive and explicit public health recommendation for adults based upon available evidence of the health benefits of physical activity.

An expert panel of scientists, including physicians, epidemiologists, exercise scientists, and public health specialists reviewed advances in pertinent physiologic, epidemiologic, and clinical scientific data, including primary research articles and reviews published since the original recommendation was issued in 1995.

The panel considered new scientific evidence relating physical activity to health, physical activity recommendations by various organizations in the interim, and communications issues.

EIGHT IMPROVEMENTS FROM THE 1995 RECOMMENDATIONS

The updated recommendation is improved in several ways.

1. Moderate-intensity physical activity has been clarified.

The 1995 document simply specified "most, preferably all days per week" as the recommended frequency while the new recommendation identifies five days per week as the recommended minimum.

2. Vigorous-intensity physical activity has been explicitly incorporated into the recommendation.

To acknowledge both the preferences of some adults for vigorous-intensity physical activity and the substantial science base related to participation in such activity, the recommendation has been clarified to encourage participation in either moderate- and/or vigorous-intensity physical activity. Vigorous-intensity physical activity was implicit in the 1995 recommendation. It is now explicitly an integral part of the physical activity recommendation.

3. Specified: Moderate- and vigorous-intensity activities are complementary in the production of health benefits and that a variety of activities can be combined to meet the recommendation.

This combining of activities is based on the amount (intensity x duration) of activity performed during the week and uses the concept of METs (metabolic equivalents) to assign an intensity value to a specific activity.

4. Specified: Aerobic activity needed is in addition to routine activities of daily life.

The updated recommendation now clearly states that the recommended amount of aerobic activity (whether of moderate- or vigorous-intensity) is in addition to routine activities of daily living which are of light intensity, such as self care, casual walking or grocery shopping, or less than 10 minutes in duration such as walking to the parking lot or taking out the trash. Few activities in contemporary life are conducted routinely at a moderate intensity for at least 10 minutes in duration. However, moderate- or vigorous-intensity activities performed as a part of daily life (e.g., brisk walking to work, gardening with shovel, carpentry) performed in bouts of 10 minutes or more can be counted towards the recommendation. Although implied, this concept was not effectively communicated in the original recommendation.

5. "More is better."

The new recommendation emphasizes the important fact that physical activity above the recommended minimum amount provides even greater health benefits. The point of maximum benefit for most health benefits has not been established but likely varies with genetic endowment, age, sex, health status, body composition and other factors. Exceeding the minimum recommendation further reduces the risk of inactivity-related chronic disease. Although the dose-response relation was acknowledged in the 1995 recommendation, this fact is now explicit.

6. Short bouts of exercise.

Although the original recommendation introduced the concept of accumulating short bouts of physical activity toward the 30-minute goal, there was confusion regarding how short these episodes could be. For consistency and clarity, the minimum length of these short bouts is clarified as being 10 minutes.

7. Muscle-strengthening recommendation now included.

Muscle-strengthening activities have now been incorporated into the physical activity recommendation. Although the 1995 recommendation mentioned the importance of muscular strength and endurance, it stopped short of making specific declarations in this area. Available evidence now allows the integration of muscle strengthening activities into the core recommendation.

8. Clarification in wording.

Minor wording changes in the recommendation have been made to enhance clarity in communications. For example, the term "aerobic," or endurance, has been added to clarify the type of physical activity being recommended and to differentiate it from muscle-strengthening exercises, which are now part of the core recommendation.

WHY DO OTHER PHYSICAL ACTIVITY GUIDELINES CALL FOR MORE ACTIVITY, SUCH AS 60 TO 90 MINUTES PER DAY?

Physical activity recommendations have been published by several national organizations in the interim that could be interpreted to be in conflict with the 1995 recommendation. However, it is very important that there are more agreements than differences when it comes to current physical activity recommendations.

Differences appear because they are intended for different groups or purposes, with a primary emphasis of these other recommendations being on preventing unhealthy weight gain or producing weight loss.

Relatively modest amounts of physical activity will improve health; physical activity for high-level cardiorespiratory fitness and expanded health gains, such as weight loss, may require more than a minimum of 30 minutes of moderate-intensity activity five days of the week.

Some reports recommend 60 minutes each day of moderately-intense physical activity as necessary to prevent weight gain and achieve the full health benefits of activity. This supports the "more is better" concept included in the current recommendations.

30 minutes	= general health benefits
60 to 90 minutes	= prevention of weight gain and weight maintenance for some people, expanded health benefits

Further, some guidelines are expanded recommendations on lifestyle factors beyond physical activity, and may include recommendations on nutrition and smoking cessation, as well as more in-depth recommendations on drug treatments or other interventions for chronic disease prevention and treatment.

Other factors that may have contributed to some confusion include people who have not accepted, and others who have misinterpreted, the original recommendation. Some people continue to believe that only vigorous-intensity activity will improve health while others believe that the light activities of their daily lives are sufficient to promote health.

WHAT IS MODERATE-INTENSITY PHYSICAL ACTIVITY?

Moderate-intensity aerobic activity is described in this paper as generally equivalent to a brisk walk, or activity that noticeably accelerates the heart rate. Examples of this type of activity include brisk walking, cycling at moderate speeds, mopping or walking with a purpose. Moderate-intensity activity is also indicative of "breaking a sweat" while remaining capable of carrying on a conversation.

HOW IS STRENGTH TRAINING ADDRESSED OR DEFINED?

To promote and maintain good health and physical independence, adults will benefit from performing activities that maintain or increase muscular strength and endurance for a minimum of two days each week. It is recommended that 8-10 exercises be performed on two non-consecutive days using the major muscle groups. To maximize strength development, a resistance (weight) should be used that allows 8-12 repetitions of each exercise resulting in volitional fatigue. Muscle-strengthening activities include a progressive weight-training program, weight bearing calisthenics, stair climbing, and similar resistance exercises that use the major muscle groups.

Resistance training at least twice per week provides a safe and effective method to improving muscular strength and endurance by 25% to 100% or more. It is recommended that 8-10 exercises be performed on two non-consecutive days using the major muscles. A resistance (weight) should be used that results in substantial fatigue after 8-12 repetitions of each exercise. The emerging evidence on musculoskeletal health benefits and the potential population-wide effects of promoting skeletal health support the need for a public health recommendation that includes resistance exercise.

The recommendations also summarize new research that links muscular strength to health benefits, such as protection against bone loss and a decreased risk of all-cause mortality.

EXPLAIN THE "MORE IS BETTER" CONCEPT

Because of the dose-response relation between physical activity and health, persons who wish to further improve their personal fitness, reduce their risk for chronic diseases and disabilities or prevent unhealthy weight gain may benefit by exceeding the minimum recommended amounts of physical activity.

Participation in aerobic and muscle-strengthening physical activities above minimum recommended amounts provides additional health benefits and results in higher levels of physical fitness. Many adults, including those who wish to improve their personal fitness or further reduce their risk for premature chronic health conditions and mortality related to physical inactivity, should exceed the minimum recommended

amounts of physical activity. In addition, to further promote and maintain skeletal health, adults will benefit by engaging in extra weight-bearing activity and higher-impact activity such as stair-climbing or jogging, as tolerated. To help prevent unhealthy weight gain, some adults will need to exceed minimum recommended amounts of physical activity to a point that is individually effective in achieving energy balance, while considering their food intake and other factors that affect body weight.

WHAT IS THE DOSE-RESPONSE OF PHYSICAL ACTIVITY AND EXERCISE?

Research supports a dose-response relation between physical activity and health benefits, in particular the lowering of risk of cardiovascular disease and premature mortality. Significantly lower risks have been observed with as little as 45-150 minutes per week of brisk walking, and this reinforces the original 1995 recommendation for ≥ 30 min/day of moderate-intensity activity on most days. Also, it is well documented that physical activity of longer duration or higher intensity is associated with additional risk decrements, but the exact shape of the dose-response curve remains unclear and may vary depending on health outcome of interest and the baseline physical activity level of the population being evaluated.

HOW IS WEIGHT MAINTENANCE AND WEIGHT LOSS ADDRESSED BY THESE RECOMMENDATIONS?

For many people, more than 30 minutes of moderate-intensity activity may be necessary to maintain weight or contribute to significant weight loss. People with relatively high daily energy expenditures tend to be less likely to gain weight over time, compared with those who have low energy expenditures. Since the control of body weight responds to both calories consumed as well as the number of calories expended during activity, both intake and expenditure have to be considered by the individual trying to prevent unhealthy weight gain or achieve weight loss.

Adults regardless of body size or shape should be encouraged to meet the moderate-intensity, minimum of 30 minutes per day on 5 days/week guideline. For individuals who achieve this level of activity, but remain overweight, an increase in their physical activity is a reasonable component of any strategy to lose weight.

SHORT BOUTS OF ACTIVITY

The 1995 recommendation advocated the accumulation of physical activity in "intermittent bouts of physical activity, as short as 8-10 minutes, totaling 30 minutes or more." Since that original recommendation, experimental research has been conducted evaluating the effects of increasing physical activity in short bouts on chronic disease risk factors.

Evidence to date suggests that moderate-intensity physical activity in shorter bouts (lasting at least 10 minutes) that is accumulated toward the 30-minute minimum can be as effective as single, longer bouts in affecting chronic disease risk factors. Cardiorespiratory fitness, lipid/lipoprotein profiles, blood pressure, fasting plasma insulin, postprandial lipidemia, and weight control all appear to be affected beneficially with intermittent bouts of physical activity. In several studies the effects of accumulated short bouts are similar to those seen with continuous bouts of physical activity lasting ≥ 30 minutes.

WHAT EMPHASIS IS GIVEN TO THE IMPORTANCE OF AVOIDING SEDENTARY BEHAVIOR?

The recommendations address a broad range of evidence to underscore concern that U.S. adults are still not active enough. Physical inactivity remains a pressing public health issue. Technology and economic incentives tend to discourage activity, technology by reducing the energy needed for activities of daily living, and economics by paying more for sedentary than active work.

Disease outcomes related to physical inactivity include cardiovascular disease, thromboembolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety and depression.

Favorable trend data from 1990 to 2004 in the United States based on the CDC Behavioral Risk Factor Surveillance System indicate that over time fewer men and women reported no moderate or vigorous intensity leisure-time physical activity. The prevalence of leisure-time physical inactivity remained fairly constant through 1996, but more recently has declined in both genders. In 2005, 23.7% of adults reported no moderate or vigorous intensity leisure-time activity.

WHAT DOES THIS RECOMMENDATION DO TO ADDRESS OVERCOMING THE BIGGEST BARRIER TO PHYSICAL ACTIVITY: TIME?

All you need to be active is a pair of walking or running shoes. In other words, you do not necessarily need an expensive gym membership or home exercise equipment in order to accumulate 30 minutes of physical activity a day.

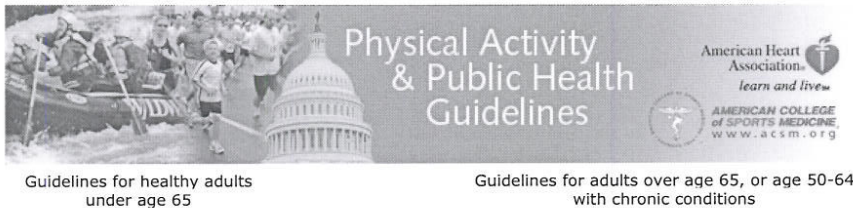
ACSM and AHA have a variety of public education resources that may help people devise a plan to fit physical activity into busy lives and schedules. For more information, please visit <PAPH landing page.>

B.7 ACSM Physical Activity Guidelines from website

ACSM | Physical Activity Guidelines

http://www.acsm.org/AM/PrinterTemplate.cfm?Section=Home_Page...

**AMERICAN COLLEGE
of SPORTS MEDICINE**
www.acsm.org



Guidelines for healthy adults
under age 65

Guidelines for adults over age 65, or age 50-64
with chronic conditions

The [American College of Sports Medicine](#) (ACSM) and the [American Heart Association](#) (AHA) have updated physical activity guidelines. These guidelines outline exercise recommendations for healthy adults and older adults and are an update from the 1995 guidelines. Choose your category below, and find recommendations, research and tips from ACSM and AHA. Together, we are proud to serve as a public resource to help people live healthier, more active lives.

[Read the healthy adults manuscript](#)

[Read the older adults manuscript](#)

Guidelines for healthy adults under age 65

Basic recommendations from ACSM and AHA:

Do moderately intense cardio 30 minutes a day, five days a week

Or

Do vigorously intense cardio 20 minutes a day, 3 days a week

And

Do eight to 10 strength-training exercises, eight to 12 repetitions of each exercise twice a week.

Moderate-intensity physical activity means working hard enough to raise your heart rate and break a sweat, yet still being able to carry on a conversation. It should be noted that to lose weight or maintain weight loss, 60 to 90 minutes of physical activity may be necessary. The 30-minute recommendation is for the average healthy adult to maintain health and reduce the risk for chronic disease.

Use the links below to learn more about the guidelines and to make physical activity a regular part of your life.

[Tips for meeting the guidelines](#)

[Starting an exercise program](#)

[Improvements from the 1995 recommendation](#)

[Frequently Asked Questions](#)

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Tips for meeting the guidelines

With busy work schedules, family obligations, and packed weekends, it can often be difficult to get the recommended amount of physical activity. Try these tips for incorporating exercise into your life:

- **Do it in short bouts.** Research shows that moderate-intensity physical activity can be accumulated throughout the day in 10-minute bouts, which can be just as effective as exercising for 30 minutes straight. This can be useful when trying to fit physical activity into a busy schedule.
- **Mix it up.** Combinations of moderate- and vigorous-intensity physical activity can be used to meet the guidelines. For example, you can walk briskly for 30 minutes twice per week and jog at a higher intensity on two other days.
- **Set your schedule.** Maybe it's easier for you to walk during your lunch hour, or perhaps hitting the pavement right after dinner is best for you. The key is to set aside specific days and times for exercise, making it just as much a regular part of your schedule as everything else.

ACSM | Physical Activity Guidelines

http://www.acsm.org/AM/PrinterTemplate.cfm?Section=Home_Page...

- **The gym isn't a necessity.** It doesn't take an expensive gym membership to get the daily recommended amount of physical activity. A pair of athletic shoes and a little motivation are all you need to live a more active, healthier life.
- **Make it a family affair.** Take your spouse, your children, or a friend with you during exercise to add some fun to your routine. This is also a good way to encourage your kids to be physically active and get them committed early to a lifetime of health.

[Back to Top](#)**Starting an exercise program**

Starting an exercise program can sound like a daunting task, but just remember that your main goal is to boost your health by meeting the basic physical activity recommendations: 30 minutes of moderate-intensity physical activity at least five days per week, or vigorous-intensity activity at least three days per week, and strength training at least twice per week.

Choose activities you enjoy, such as swimming, biking, or playing basketball with friends to get your daily physical activity. If you need variety of activities to stay motivated, combine a few that appeal to you.

Physical activity can be accumulated through a variety of activities, not just running. **Walking** is a great way to do moderate-intensity physical activity. [This issue](#) of ACSM's Fit Society Page® Newsletter contains an article on walking for health, as well as other features on getting active.

These Current Comments and brochures may also be helpful in designing your own activity program, gathering ideas for ways to accumulate physical activity, or learning about exercise and health:

[Exercise While Traveling](#)
[Women's Heart Health and a Physically Active Lifestyle](#)
[Energy Expenditure in Different Modes of Exercise](#)
[Exercise and Age-Related Weight Gain](#)

From the "Selecting and Effectively Using" brochure series:

[Heart Rate Monitors](#)
[Pedometers](#)
[Rubber Band Resistance Exercise](#)
[Health/Fitness Facilities](#)
[Home Treadmills](#)
[Stability Balls](#)
[Free Weights](#)
[Home Weights](#)
[Elliptical Trainers](#)
[Personal Trainers](#)
[Stair Steppers/Climbers](#)
[Stationary Bicycles](#)

[Click here](#) to view ACSM's news and publications page, with links to all Current Comments and brochures.

ACSM produces the Fit Society Page® Newsletter for the public on a quarterly basis. Each issue contains helpful articles on health and fitness. To view the latest issues, [click here](#).

[Back to Top](#)**Improvements from the 1995 recommendation**

Although the 2007 recommendations are similar to the 1995 recommendations at the core, eight improvements have been made:

1. Moderate-intensity physical activity has been clarified.

The 1995 document simply specified "most, preferably all days per week" as the recommended frequency while the new recommendation identifies five days per week as the recommended minimum.

2. Vigorous-intensity physical activity has been explicitly incorporated into the recommendation.

To acknowledge both the preferences of some adults for vigorous-intensity physical activity and the substantial science base related to participation in such activity, the recommendation has been clarified to encourage participation in either moderate- and/or vigorous-intensity physical activity. Vigorous-intensity physical activity was implicit in the 1995 recommendation. It is now explicitly an integral part of the physical activity recommendation.

3. Specified: Moderate- and vigorous-intensity activities are complementary in the production of health benefits and that a variety of activities can be combined to meet the recommendation.

This combining of activities is based on the amount (intensity x duration) of activity performed during the week and uses the concept of METs (metabolic equivalents) to assign an intensity value to a specific activity.

4. Specified: Aerobic activity needed is in addition to routine activities of daily life.

The updated recommendation now clearly states that the recommended amount of aerobic activity (whether of moderate- or vigorous-intensity) is in addition to routine activities of daily living which are of light intensity, such as self care, casual walking or grocery shopping, or less than 10 minutes of duration such as walking to the parking lot or taking out the trash. Few activities in contemporary life are conducted routinely at a moderate intensity for at least 10 minutes in duration. However, moderate- or vigorous-intensity activities performed as a part of daily life (e.g., brisk walking to work, gardening with shovel, carpentry) performed in bouts of 10 minutes or more can be counted towards the recommendation. Although implied, this concept was not effectively communicated in the original recommendation.

5. "More is better."

The new recommendation emphasizes the important fact that physical activity above the recommended minimum amount provides even greater health benefits. The point of maximum benefit for most health benefits has not been established but likely varies with genetic endowment, age, sex, health status, body composition and other factors. Exceeding the minimum recommendation further reduces the risk of inactivity-related chronic disease. Although the dose-response relation was acknowledged in the 1995 recommendation, this fact is now explicit.

6. Short bouts of exercise.

Although the original recommendation introduced the concept of accumulating short bouts of physical activity toward the 30-minute goal, there was confusion regarding how short these episodes could be. For consistency and clarity, the minimum length of these short bouts is clarified as being 10 minutes.

7. Muscle-strengthening recommendation now included.

Muscle-strengthening activities have now been incorporated into the physical activity recommendation. Although the 1995 recommendation mentioned the importance of muscular strength and endurance, it stopped short of making specific declarations in this area. Available evidence now allows the integration of muscle strengthening activities into the core recommendation.

8. Clarification in wording.

Minor wording changes in the recommendation have been made to enhance clarity in communications. For example, the term "aerobic," or endurance, has been added to clarify the type of physical activity being recommended and to differentiate it from muscle-strengthening exercises, which are now part of the core recommendation.

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**Guidelines for adults over age 65
(or adults 50-64 with chronic conditions, such as arthritis)**

Basic recommendations from ACSM and AHA:

Do moderately intense aerobic exercise 30 minutes a day, five days a week
Or
 Do vigorously intense aerobic exercise 20 minutes a day, 3 days a week
And
 Do eight to 10 strength-training exercises, 10-15 repetitions of each exercise twice to three times per week
And
 If you are at risk of falling, perform balance exercises
And
 Have a physical activity plan.

Both aerobic and muscle-strengthening activity is critical for healthy aging. **Moderate-intensity aerobic exercise** means working hard at about a level-six intensity on a scale of 10. You should still be able to carry on a conversation during exercise.

Older adults or adults with chronic conditions should develop an **activity plan** with a health professional to manage risks and take therapeutic needs into account. This will maximize the benefits of physical activity and ensure your safety.

Use the links below to learn more about the guidelines and to make physical activity a regular part of your life.

[Key points to the guidelines for older adults](#)

[Starting an exercise program](#)

ACSM | Physical Activity Guidelines

http://www.acsm.org/AM/PrinterTemplate.cfm?Section=Home_Page...[Frequently Asked Questions](#)[Back to Top](#)**Key points to the guidelines for older adults**

Although the guidelines for older adults and adults with chronic conditions are similar to those for younger adults, there are a few key differences and points to consider.

- **Start, and get help if you need it.** The general recommendation is that older adults should meet or exceed 30 minutes of moderate physical activity on most days of the week; however, it is also recognized that goals below this threshold may be necessary for older adults who have physical impairments or functional limitations.
- **Functional health** is an important benefit of physical activity for older adults. Physical activity contributes to the ease of doing everyday activities, such as gardening, walking or cleaning the house.
- **Strength training** is extremely important. Strength training is important for all adults, but especially so for older adults, as it prevents loss of muscle mass and bone, and is beneficial for functional health.
- **If you can exceed the minimum recommendations**, do it! The minimum recommendations are just that: the *minimum* needed to maintain health and see fitness benefits. If you can exceed the minimum, you can improve your personal fitness, improve management of an existing disease or condition, and reduce your risk for health conditions and mortality.
- **Flexibility** is also important. Each day you perform aerobic or strength-training activities, take an extra 10 minutes to stretch the major muscle and tendon groups, with 10-30 seconds for each stretch. Repeat each stretch three to four times. Flexibility training will promote the ease of performing everyday activities.

[Back to Top](#)**Starting an exercise program**

Starting an exercise program can sound like a daunting task, but just remember that your main goal is to meet the basic physical activity recommendations: 30 minutes of moderate-intensity physical activity at least five days per week, or vigorous-intensity activity at least three days per week, and strength training two to three times per week.

Choose activities that appeal to you and will make exercise fun. **Walking** is a great, easy way to do moderate-intensity physical activity. [This issue](#) of ACSM's Fit Society Page® Newsletter contains an article on walking for health, as well as other features on getting active.

Here are Current Comments and brochures from the American College of Sports Medicine to help you get started, gather ideas for your exercise program, and inform you:

[Exercise and the Older Adult](#)
[Strength, Power, and the Baby Boomer](#)
[Resistance Training in the Older Adult](#)
[Exercise Your Way to Lower Blood Pressure](#)
[Exercise for Persons with Cardiovascular Disease](#)

From the "Selecting and Effectively Using" brochure series:

[Heart Rate Monitors](#)
[Pedometers](#)
[Rubber Band Resistance Exercise](#)
[Health/Fitness Facilities](#)
[Home Treadmills](#)
[Stability Balls](#)
[Free Weights](#)
[Home Weights](#)
[Elliptical Trainers](#)
[Personal Trainers](#)
[Stair Steppers/Climbers](#)
[Stationary Bicycles](#)

ACSM produces the Fit Society Page® Newsletter for the public on a quarterly basis. Two issues of the newsletter specifically relate to older adults:
[Nutrition and Fitness for the Older Adult](#)

ACSM | Physical Activity Guidelines

http://www.acsm.org/AM/PrinterTemplate.cfm?Section=Home_Page...

Exercise and the Older Adult

Each issue of the newsletter contains helpful articles on health and fitness. To view the latest issues, [click here](#).

ACSM's Active Aging Partnership has developed a national blueprint to increase physical activity in adults over age 50. This Web site contains many helpful tips, links and brochures. [Visit the aging blueprint](#).

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**B.8 Physical Activity and Public Health: Updated Recommendation
for Adults from the American College of Sports Medicine and the
American Heart Association, William L. Haskell, I-Min Lee, et al.,
Medicine & Science in Sports & Exercise, 2007, 1423-1434**

SPECIAL COMMUNICATIONS

Special Reports

Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association

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ABSTRACT

HASKELL, W. L., I-M. LEE, R. R. PATE, K. E. POWELL, S. N. BLAIR, B. A. FRANKLIN, C. A. MACERA, G. W. HEATH, P. D. THOMPSON, and A. BAUMAN. Physical Activity and Public Health: Updated Recommendation for Adults from the American College of Sports Medicine and the American Heart Association. *Med. Sci. Sports Exerc.*, Vol. 39, No. 8, pp. 1423–1434, 2007. **Summary:** In 1995 the American College of Sports Medicine and the Centers for Disease Control and Prevention published national guidelines on Physical Activity and Public Health. The Committee on Exercise and Cardiac Rehabilitation of the American Heart Association endorsed and supported these recommendations. The purpose of the present report is to update and clarify the 1995 recommendations on the types and amounts of physical activity needed by healthy adults to improve and maintain health. Development of this document was by an expert panel of scientists, including physicians, epidemiologists, exercise scientists, and public health specialists. This panel reviewed advances in pertinent physiologic, epidemiologic, and clinical scientific data, including primary research articles and reviews published since the original recommendation was issued in 1995. Issues considered by the panel included new scientific evidence relating physical activity to health, physical activity recommendations by various organizations in the interim, and communications issues. Key points related to updating the physical activity recommendation were outlined and writing groups were formed. A draft manuscript was prepared and circulated for review to the expert panel as well as to outside experts. Comments were integrated into the final recommendation. **Primary Recommendation:** To promote and maintain health, all healthy adults aged 18 to 65 yr need moderate-intensity aerobic (endurance) physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 min on three days each week. [I (A)] Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. [IIa (B)] For example, a person can meet the recommendation by walking briskly for 30 min twice during the week and then jogging for 20 min on two other days. Moderate-intensity aerobic activity, which is generally equivalent to a brisk walk and noticeably accelerates the heart rate, can be accumulated toward the 30-min minimum by performing bouts each lasting 10 or more minutes. [I (B)] Vigorous-intensity activity is exemplified by jogging, and causes rapid breathing and a substantial increase in heart rate. In addition, every adult should perform activities that maintain or increase muscular strength and endurance a minimum of two days each week. [IIa (A)] Because of the dose-response relation between physical activity and health, persons who wish to further improve their personal fitness, reduce their risk for chronic diseases and disabilities or prevent unhealthy weight gain may benefit by exceeding the minimum recommended amounts of physical activity. [I (A)]

Key Words: BENEFITS, RISKS, PHYSICAL ACTIVITY DOSE, PHYSICAL ACTIVITY INTENSITY

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In 1995 the Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) issued a public health recommendation that “Every US adult should accumulate 30 minutes or more of moderate-intensity physical activity on most, preferably all, days of the week” (49). The purpose of the recommendation was to provide a “clear, concise, public health message” that would “encourage increased participation in physical activity” by a largely sedentary US population.

More than 10 years have passed since this recommendation was issued. New science has added to our understanding of the biological mechanisms by which physical activity provides health benefits and the physical activity profile (type, intensity, amount) that is associated with enhanced health and quality of life. The intent of the original recommendation, however, has not been fully realized. Physical inactivity remains a pressing public health issue. Technology and economic incentives tend to discourage activity, technology by reducing the energy needed for activities of daily living, and economics by paying more for sedentary than active work.

In addition, there are people who have not accepted, and others who have misinterpreted, the original recommendation. Some people continue to believe that only vigorous-intensity activity will improve health while others believe that the light activities of their daily lives are sufficient to promote health (53). Compounding these challenges, physical activity recommendations have been published in the interim that could be interpreted to be in conflict with the 1995 recommendation (4,26,57,71).

Favorable trend data from 1990 to 2004 in the United States based on the CDC Behavioral Risk Factor Surveillance System indicate that over time fewer men and women reported no leisure-time physical activity (13). The prevalence of leisure-time physical inactivity remained fairly constant through 1996, but more recently has declined in both genders (Fig. 1). In 2005 23.7% of adults reported no leisure-time activity (14).

However, there remains a broad range of evidence to underscore concern that US adults are still not active enough. For example, data from 2005 indicate that less than half (49.1%) of U.S. adults met the CDC/ACSM physical activity recommendation (12). Men were more likely to meet the recommendation (50.7%) than women (47.9%). For men and women combined, younger people were more likely to be active than older people, with the prevalence of those meeting the recommendation declining from 59.6% among those 18–24 yr of age to 39.0% among those 65 years and older (Fig. 2). White, non-Hispanics (51.1%) were most likely to meet the recommendation followed by “other” racial or ethnic groups

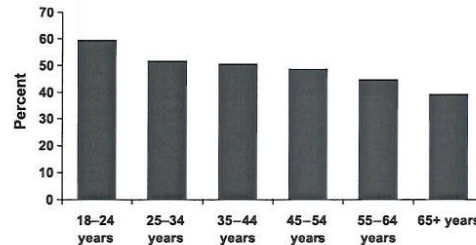


FIGURE 2—Prevalence of U.S. men and women meeting the CDC/ACSM physical activity recommendations by age, 2005.

(46.3%), Hispanics, (44.0%) and African-Americans (41.8%). Persons with a college degree were the most likely to meet the recommendation (53.2%) followed by those with some college education (50.2%), a high school education (45.9%), and less than high school (37.8%).

Disease outcomes inversely related to regular physical activity in prospective observational studies include cardiovascular disease, thromboembolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety and depression (33). Scientific evidence continues to accumulate, with more recent efforts focused on the nature of the relation between physical activity and health, rather than trying to determine if such a relation exists (33). This additional evidence includes compelling new data on women (21,39,40), and more conclusive evidence on stroke (77), some cancers (69), and cognitive function (78,83). The primary limitation of much of the data linking physical activity to morbidity and mortality due to chronic diseases is that for many conditions few randomized trials of adequate design have been conducted. However, this situation is not all that different from data regarding the relation between some other health-related behaviors and clinical outcomes, such as cigarette smoking or saturated fat intake and coronary heart disease (CHD). No adequately designed randomized controlled study in the general population has shown that stopping smoking or decreasing saturated fat or trans-fatty acid

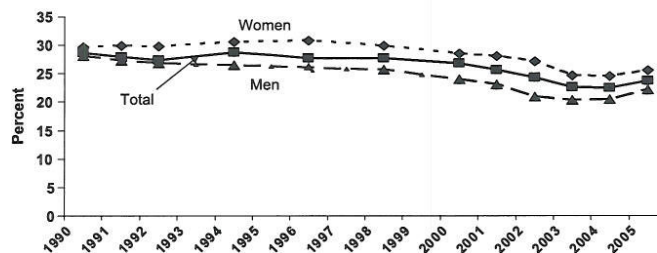


FIGURE 1—Prevalence of no reported leisure-time physical activity among U.S. men and women, 1990–2005.

intake significantly decreases CHD mortality yet getting the public to stop smoking or reduce their intake of saturated fat or trans-fatty acids are major components of national public health campaigns (50).

The purpose of this report is to update the 1995 CDC/ACSM recommendation. The intent is to provide a more comprehensive and explicit public health recommendation for adults based upon available evidence of the health benefits of physical activity.

Expert panel process. In February 2003, an expert panel was convened and charged with reviewing and updating the original CDC/ACSM recommendation for physical activity and public health (49). This panel, which consisted of physicians, epidemiologists, exercise scientists and public health experts, reviewed scientific advances since the publication of the original recommendation, newly issued recommendations provided by other organizations and communications issues such as clarity and consistency.

For scientific input, the panel initially relied heavily on published evidence from a meeting held in 2000 jointly sponsored by CDC and Health Canada on Dose-Response Aspects of Physical Activity and Health (33). The conclusion and consensus statement from this meeting were based on systematic reviews of the literature. Panel members also conducted extensive searches of the literature on physical activity and health to 2006.

In addition to scientific updates, the expert panel considered issues and advances in understanding roles and strategies in communication of health messages in the update and clarification of the prior recommendations. A second CDC-Health Canada workshop on communicating physical activity messages was held in 2001 and identified several key strategies for improving the communication of physical activity recommendations (59). A different expert panel developed a recommendation for older adults as a companion recommendation to that presented in this article (47). Manuscripts describing the recommendation for adults generally and for older adults as a companion were circulated for comments, revised, and edited for consistency before review and approval by ACSM and the American Heart Association (AHA). For current physical activity guidelines directed at school-age youth

the reader is referred to the recent publication by Strong and colleagues (65).

UPDATED RECOMMENDATION STATEMENT

This recommendation applies to healthy adults between 18 and 65 yr of age, and to persons in this age range with chronic conditions not related to physical activity (e.g., hearing impairment). During pregnancy and the postpartum period additional precautions may be needed: these issues have been considered by other expert committees (3,7). The present preventive recommendation specifies how adults, by engaging in regular physical activity, can promote and maintain health, and reduce risk of chronic disease and premature mortality. A companion recommendation (47) builds on the information in this paper but specifically applies to adults aged 65 and over, and adults aged 50–64 with chronic conditions or physical functional limitations (e.g., arthritis), that affect movement ability or physical fitness. The following recommendation reflects a review of evidence published since the issuance of the CDC/ACSM recommendation in 1995 and considers key issues not fully clarified in the original recommendation. Classification of recommendations (COR) and level of evidence (LOE) are expressed in American College of Cardiology/American Heart Association (ACC/AHA) format as defined in Table 1 and the *Methodology Manual for ACC/AHA Guideline Writing Committees* (2).

Aerobic Activity. To promote and maintain health, all healthy adults aged 18–65 yr need moderate-intensity aerobic physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic activity for a minimum of 20 min on three days each week. [I (A)] Also, combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. [IIa (B)] For example, a person can meet the recommendation by walking briskly for 30 min twice during the week and then jogging for 20 min on two other days. Moderate-intensity aerobic activity, which is generally equivalent to a brisk walk and noticeably accelerates the heart rate, can be accumulated toward the 30-min minimum from bouts lasting 10 or more minutes.

TABLE 1. ACC/AHA approach to assigning the classification of recommendations and level of evidence.

Classifications of recommendation (COR) I, II, and III are used to summarize indications (suggested phrases for writing recommendations)	
Class I: Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective (should; is recommended; is indicated; is useful, effective, beneficial)	
Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment	
IIa: Weight of evidence/opinion is in favor of usefulness/efficacy (is reasonable; can be useful, effective or beneficial; is probably recommended or indicated)	
IIb: Usefulness/efficacy is less well established by evidence/opinion (may/might be considered, may/might be reasonable, usefulness/effectiveness is unknown, unclear/uncertain or not well established)	
Class III: Conditions for which there is evidence and/or general agreement that the procedure/treatment is not useful/effective and in some cases may be harmful (is not recommended; is not indicated; should not; is not useful/effective, beneficial; may be harmful)	
Levels of evidence (LOE) for individual class assignments	
A: Data derived from multiple randomized clinical trials	
B: Data derived from a single randomized trial or from nonrandomized studies	
C: Consensus opinion of experts	

For details about this classification system see reference (2).

[I (B)] Vigorous-intensity activity is exemplified by jogging, and causes rapid breathing and a substantial increase in heart rate. This recommended amount of aerobic activity is in addition to routine activities of daily living of light intensity (e.g., self care, cooking, casual walking or shopping) or lasting less than 10 min in duration (e.g., walking around home or office, walking from the parking lot).

Muscle-Strengthening Activity. To promote and maintain good health and physical independence, adults will benefit from performing activities that maintain or increase muscular strength and endurance for a minimum of two days each week. [IIa (A)] It is recommended that 8–10 exercises be performed on two or more nonconsecutive days each week using the major muscle groups. To maximize strength development, a resistance (weight) should be used that allows 8–12 repetitions of each exercise resulting in volitional fatigue. Muscle-strengthening activities include a progressive weight-training program, weight bearing calisthenics, stair climbing, and similar resistance exercises that use the major muscle groups.

Benefits of Greater Amounts of Activity. Participation in aerobic and muscle-strengthening physical activities above minimum recommended amounts provides additional health benefits and results in higher levels of physical fitness. [I (A)] Many adults, including those who wish to improve their personal fitness or further reduce their risk for premature chronic health conditions and mortality related to physical inactivity, should exceed the minimum recommended amounts of physical activity (33). In addition, to further promote and maintain skeletal health, adults will benefit by engaging in extra weight-bearing activity and higher-impact activity such as stair-climbing or jogging, as tolerated. [IIa (B)] To help prevent unhealthy weight gain, some adults will need to exceed minimum recommended amounts of physical activity to a point that is individually effective in achieving energy balance, while considering their food intake and other factors that affect body weight. [IIa (B)]

CLARIFICATIONS TO THE 1995 RECOMMENDATION

Although fundamentally unchanged from the 1995 recommendation, the updated recommendation is improved in several ways. First, the recommended frequency for moderate-intensity physical activity has been clarified. The 1995 document simply specified “most, preferably all days per week” as the recommended frequency while the new recommendation identifies five days per week as the recommended minimum.

Second, vigorous-intensity physical activity has been explicitly incorporated into the recommendation. To acknowledge both the preferences of some adults for vigorous-intensity physical activity and the substantial science base related to participation in such activity (4),

the recommendation has been clarified to encourage participation in either moderate- and/or vigorous-intensity physical activity. Vigorous-intensity physical activity was implicit in the 1995 recommendation. It is now explicitly an integral part of the physical activity recommendation.

Third, the updated recommendation now specifies that moderate- and vigorous-intensity activities are complementary in the production of health benefits and that a variety of activities can be combined to meet the recommendation. This combining of activities is based on the amount (intensity $\times$ duration) of activity performed during the week and uses the concept of METs (metabolic equivalents) to assign an intensity value to a specific activity (See Table 1 and section regarding *Activity Dose* below).

Fourth, the updated recommendation now clearly states that the recommended amount of aerobic activity (whether of moderate- or vigorous-intensity) is in addition to routine activities of daily living which are of light intensity, such as self care, casual walking or grocery shopping, or less than 10 min of duration such as walking to the parking lot or taking out the trash. Few activities in contemporary life are conducted routinely at a moderate intensity for at least 10 min in duration. However, moderate- or vigorous-intensity activities performed as a part of daily life (e.g., brisk walking to work, gardening with shovel, carpentry) performed in bouts of 10 min or more can be counted towards the recommendation. Although implied, this concept was not effectively communicated in the original recommendation.

Fifth, the new recommendation emphasizes the important fact that physical activity above the recommended minimum amount provides even greater health benefits. The point of maximum benefit for most health benefits has not been established but likely varies with genetic endowment, age, sex, health status, body composition and other factors. Exceeding the minimum recommendation further reduces the risk of inactivity-related chronic disease. Although the dose-response relation was acknowledged in the 1995 recommendation, this fact is now explicit.

Sixth, although the original recommendation introduced the concept of accumulating short bouts of physical activity toward the 30-min goal, there was confusion regarding how short these episodes could be. For consistency and clarity, the minimum length of these short bouts is clarified as being 10 min.

Seventh, muscle-strengthening activities have now been incorporated into the physical activity recommendation. Although the 1995 recommendation mentioned the importance of muscular strength and endurance, it stopped short of making specific declarations in this area. Available evidence now allows the integration of muscle strengthening activities into the core recommendation.

Finally, minor wording changes in the recommendation have been made to enhance clarity in communications. For example, the term “aerobic” or endurance has been added to clarify the type of physical activity being recommended

and to differentiate it from muscle-strengthening exercises, which are now part of the core recommendation.

Activity Dose. The term *dose* is used frequently in descriptions of physical activity, but it can be interpreted in several ways—as the total amount of physical activity (i.e., total energy expended) or as the intensity, duration, or frequency of activity. Although many studies have included a measure of the total amount of physical activity (which may be used to characterize participants as “active,” “moderately active,” or “inactive” for example), relatively few observational studies have included details on the kinds of activity carried out or the duration and frequency of each bout of activity (36,37). In brief, the total amount of physical activity is a function of its intensity, duration and frequency. Accordingly, vigorous intensity activities (those having > 6.0 metabolic equivalents or METs) carried out for a particular duration and frequency generate greater energy expenditure than moderate-intensity activities (3.0 to 6.0 METs) of the same duration and frequency.

Since the 1995 recommendation, several large-scale prospective observational studies, enrolling thousands to tens of thousands of persons, have clearly documented a dose-response relation between physical activity and risk of cardiovascular disease and premature mortality in men and women, and in ethnically diverse participants (38,40,48,55, 67,84). These studies include the College Alumni Health Study (48), the Health Professionals' Follow-up Study (67), the Nurses' Health Study (41), the Women's Health Initiative (40), and the Women's Health Study (37). All observed significantly lower levels of risk with greater amounts of physical activity. Readers should note that the physical activity assessed in these studies was intentional; i.e., it was in addition to the usual activities of daily living).

Very few studies have been conducted to examine the effects of intensity, duration, or frequency of physical activity independent of their contribution to the total amount of physical activity. Based on recent data, there is some indication that vigorous-intensity activities may have greater benefit for reducing cardiovascular disease and premature mortality than moderate-intensity physical activity, which is independent of their contribution to energy expenditure (35,61,66). In addition, the results of a single observational study suggest that duration of activity bouts does not influence risk after accounting for the total amount of energy expended (36).

Significantly lower risks of coronary heart disease or cardiovascular disease have been associated with as little as 2.6–5.0 MET·h·wk⁻¹ of walking (approximately 45–75 minutes per week of brisk walking) in the Women's Health Initiative (40), 60–90 min·wk⁻¹ of walking in the Women's Health Study (38), and 3.9–9.9 MET·h·wk⁻¹ of walking (approximately 60–150 min·wk⁻¹ at a brisk pace) in the Nurses' Health Study (39). With higher “doses” of physical activity, risks for cardiovascular disease have been lower

but the exact magnitude of the additional reduction in risk remains uncertain.

Thus, a body of evidence has grown since the 1995 recommendation that reaffirms a dose-response relation between physical activity and health benefits, in particular the lowering of risk of cardiovascular disease and premature mortality. That significantly lower risks have been observed with as little as 45–150 min·wk⁻¹ of brisk walking reinforces the original 1995 recommendation for ≥30 min·d⁻¹ of moderate-intensity activity on most days. Also, it is well documented that physical activity of longer duration or higher intensity is associated with additional risk decrements, but the exact shape of the dose-response curve remains unclear and may vary depending on health outcome of interest and the baseline physical activity level of the population being evaluated.

The 1995 recommendation advocated the accumulation of physical activity in “intermittent bouts of physical activity, as short as 8–10 min, totaling 30 min or more.” Since publication of the original recommendation, experimental research has been conducted evaluating the effects of increasing physical activity in short bouts on chronic disease risk factors. As a risk factor, these variables are typically in the causal pathway of the disease process and by altering these risk factors in a favorable direction, it is assumed that increases in physical activity will eventually reduce risk of adverse clinical outcomes.

Although existing research addressing the accumulation issue of physical activity in short bouts is less than complete, a summary of the experimental findings suggests that moderate-intensity physical activity in shorter bouts (usually lasting 10 min) that is accumulated toward the 30-min minimum can be as effective as single, longer bouts in affecting chronic disease risk factors. Cardiorespiratory fitness (17,28,44,46), lipid/lipoprotein profiles (17,46), blood pressure (44), fasting plasma insulin (17), postprandial lipidemia (45) and weight control (28) all appear to be affected beneficially with intermittent bouts of physical activity. In several studies the effects of accumulated short bouts are similar to those seen with continuous bouts of physical activity lasting ≥30 min.

A question raised frequently about physical activity dose is how various amounts of moderate- and vigorous-intensity aerobic activity that individually are below the recommended thresholds might be combined to meet the intent of these recommendations. For example, can two or three bouts of moderate-intensity physical activity be combined with two bouts of vigorous-intensity physical activity to meet recommendations? Existing scientific literature does not allow a direct answer to this question. However, the data are strongly suggestive: there is a large body of evidence from observational studies showing that higher levels of energy expended—which in a free-living population likely derives from a combination of moderate- and vigorous-intensity activities—are associated with numerous health benefits (25,36,37,39,40,55,67,78).

The health benefits of various combinations of moderate- and vigorous-intensity activity have not been sufficiently examined in observational studies nor investigated using randomized controlled trials. However, based on health outcome data from observational studies and an extensive database on the energy costs of various activities, the following approach is recommended for determining what combinations of moderate- and vigorous-intensity activities meet the dose recommendation.

A shorthand method for estimating energy expenditure during physical activity is the MET or *metabolic equivalent* (1). One MET represents an individual's energy expenditure while sitting quietly. An adult walking at 3 mph on a flat, hard surface is expending about 3.3 METs and while jogging/running on a similar surface at 5 mph (12 min per mile pace) is expending approximately 8 METs (see Table 2 for the MET values of selected activities). Thus, if a man or women walked at 3 mph (moderate-intensity) for 30 min they would accumulate 99 MET-min of activity ($3.3 \text{ MET} \times 30 \text{ min} = 99 \text{ MET-min}$), but if they jogged at 5 mph for 20 min they would accumulate 160 MET-min ($8 \text{ MET} \times 20 \text{ min} = 160 \text{ MET-min}$). So, if a man or women was to meet the minimum moderate intensity recommendation by walking for 30 min at 3 mph on 5 days of the week, they would accumulate about 495 MET-min (99×5), or to meet the minimum vigorous-intensity recommendation by jogging at 5 mph for 20 min on 3 days they would accumu-

late about 480 MET-min (160×3). Also, they could meet the recommendation by walking at 3.0 mph for 30 min on 2 days ($3.3 \text{ MET} \times 60 \text{ min} = 198 \text{ MET-min}$) and then jogging at 5 mph for 20 min on 2 other days ($8 \text{ MET} \times 40 \text{ min} = 320 \text{ MET-min}$) for a total during the week of about 518 MET-min ($320 + 198$).

Using METs as an indicator of activity intensity allows generally healthy adults to accumulate credit for the various moderate or vigorous intensity activities they perform during the week. When combining moderate and vigorous intensity activity to meet the current recommendation, the minimum goal should be in the range of 450 to 750 MET-min-wk⁻¹. These values are based on the MET range of 3 to 6 for moderate-intensity activity and 150 min-wk⁻¹ ($3 \times 150 = 450$ and $5 \times 150 = 750$). Individuals should start at the lower end of this range when beginning an activity program and progress towards the higher end as they become more fit. Listed in Table 2 are the MET values for a variety of physical activities that are of light, moderate or vigorous intensity. For a comprehensive listing of MET values see tabulation by Ainsworth and colleagues (1) or the following Web site: <http://prevention.sph.sc.edu/tools/compendium.htm>. It is recognized that actual MET values can vary from person to person depending on a variety of factors (e.g., how they perform the activity, skill level, body composition), but the values provided in the compendium are sufficiently accurate

TABLE 2. MET equivalents of common physical activities classified as light, moderate or vigorous intensity.

Light <3.0 METs	Moderate 3.0 – 6.0 METs	Vigorous >6.0 METs
Walking Walking slowly around home, store or office = 2.0*	Walking Walking 3.0 mph = 3.3* Walking at very brisk pace (4 mph) = 5.0*	Walking, jogging & running Walking at very very brisk pace (4.5 mph) = 6.3* Walking/hiking at moderate pace and grade with no or light pack (<10 lb) = 7.0 Hiking at steep grades and pack 10–42 lb = 7.5–9.0 Jogging at 5 mph = 8.0* Jogging at 6 mph = 10.0* Running at 7 mph = 11.5*
Household & occupation Sitting — using computer work at desk using light hand tools = 1.5 Standing performing light work such as making bed, washing dishes, ironing, preparing food or store clerk = 2.0–2.5	Cleaning — heavy: washing windows, car, clean garage = 3.0 Sweeping floors or carpet, vacuuming, mopping = 3.0–3.5 Carpentry — general = 3.6 Carrying & stacking wood = 5.5 Mowing lawn — walk power mower = 5.5	Shoveling sand, coal, etc. = 7.0 Carrying heavy loads such as bricks = 7.5 Heavy farming such as baling hay = 8.0 Shoveling, digging ditches = 8.5
Leisure time & sports Arts & crafts, playing cards = 1.5 Billiards = 2.5 Boating — power = 2.5 Croquet = 2.5 Darts = 2.5 Fishing — sitting = 2.5 Playing most musical instruments = 2.0–2.5	Badminton — recreational = 4.5 Basketball — shooting around = 4.5 Bicycling — on flat: light effort (10–12 mph) = 6.0 Dancing — ballroom slow = 3.0; ballroom fast = 4.5 Fishing from river bank & walking = 4.0 Golf — walking pulling clubs = 4.3 Sailing boat, wind surfing = 3.0 Swimming leisurely = 6.0† Table tennis = 4.0 Tennis doubles = 5.0 Volleyball — noncompetitive = 3.0–4.0	Basketball game = 8.0 Bicycling — on flat: moderate effort (12–14 mph) = 8.0; fast (14–16 mph) = 10 Skiing cross country — slow (2.5 mph) = 7.0; fast (5.0–7.9 mph) = 9.0 Soccer — casual = 7.0; competitive = 10.0 Swimming — moderate/hard = 8–11† Tennis singles = 8.0 Volleyball — competitive at gym or beach = 8.0

Ainsworth, et al. 2000 (1). * On flat, hard surface. † MET values can vary substantially from person to person during swimming as a result of different strokes and skill levels.

for generally healthy adults age 18–65 yr for the purposes of this recommendation.

In summary, 30 min of moderate-intensity physical activity 5 d·wk⁻¹ or 20 min of vigorous-intensity physical activity on 3 d·wk⁻¹, or a combination of moderate- and vigorous-intensity activity in the range of 450 to 750 MET·min·wk⁻¹ is the minimal amount of activity recommended to achieve substantial health benefits over and above the routine light-intensity activities of daily living. This activity can be accumulated in ≥10-min bouts. Larger amounts of physical activity, including more activity at higher intensities, provide additional health benefits but the nature of the relationship (amount versus benefit) likely varies by health outcome. More generally, the shape of the dose-response curves, the possible points of maximal benefit, and the possible benefits from activity bouts shorter than 10 min remain unclear. Moreover, further investigation is required to determine how men and women might best combine bouts of moderate- and vigorous-intensity physical activity to obtain desired benefits and the relative importance of various components of physical activity (e.g., intensity, frequency, energy expenditure) in achieving specific outcomes.

Muscular Strength and Endurance. Evidence supporting the health benefits of activities that increase muscular strength and endurance in non-elderly populations has accumulated rapidly in recent years (10,52). For example, mechanical loading on skeletal tissue by resistance exercise can effectively stimulate an increase in bone formation in young adults and slow bone loss in middle age (75). Presumably, this can result in a lower risk of osteoporosis, osteopenia and bone fracture. In addition, recent observational studies have suggested an inverse association between risk of all-cause mortality and various components of muscular strength or endurance (18,32). Although the specific mechanisms for these associations are not known, one may be the ability of muscular strengthening activities to promote the development and maintenance of metabolically active lean muscle mass, which is particularly important for enhancing glucose metabolism (27). Resistance training at least twice per week provides a safe and effective method to improving muscular strength and endurance by 25% to 100% or more (52). It is recommended that 8–10 exercises be performed on two or more nonconsecutive days each week using the major muscles. A resistance (weight) should be used that results in substantial fatigue after 8–12 repetitions of each exercise. The emerging evidence on musculoskeletal health benefits (30,52) and the potential population-wide effects of promoting skeletal health support the need for a public health recommendation that includes resistance exercise.

Obesity, Gaining, and Losing Weight. Rapidly increasing rates of obesity reflect a lack of energy balance as large numbers of people are consistently expending fewer calories than they consume. Unfortunately, few

reliable data are available on the relative contributions to this obesity epidemic by energy intake and energy expenditure, although both as well as individual variation are important. While more information is gathered on the varied causes of obesity, it seems vitally important for public health efforts to address both energy expenditure and energy intake.

It is reasonable to assume that persons with relatively high daily energy expenditures would be less likely to gain weight over time, compared with those who have low energy expenditures. So far, data to support this hypothesis are not particularly compelling (57), but some observational data indicate that men who report at least 45–60 min of activity on most days gain less weight than less active men (16). Furthermore, the specific types and amounts of activity required to prevent weight gain in the majority of people have not been well established using prospective study designs, and it is clear that they cannot be precisely set without considering individual factors such as energy intake and genetics. Thus, currently it is best to assume that the specific amount of physical activity that will help prevent unhealthy weight gain is a function that differs from individual to individual, but that in general more activity increases the probability of success (62).

The only discretionary component of daily energy expenditure is physical activity, and the replacement of typically sedentary routines by various kinds of activity is a common approach to increasing energy expenditure. For example, walking or bicycling instead of driving a car for short trips would expend additional calories while traveling the same distance. Still, despite the intuitive appeal of the idea that physical activity helps in losing weight, it appears to produce only modest increments of weight loss beyond those achieved by dietary measures and its effects no doubt vary among people (64). A review of studies where exercise or physical activity was the sole intervention or was added to caloric restriction found only modest weight loss resulting from exercise (57). However, these studies were relatively short term and the effect of physical activity on weight loss over the long term remains unclear.

Several observational studies have been conducted on the role of physical activity in preventing weight regain after an initial sizable weight loss (34,41,58,76,82). The designs and methods of these studies have varied, but all focused on people who had lost 30–50 lb (13.6–22.7 kg) and had not regained after several years. Studies using self-report of physical activity and energy expenditure assessed by doubly labeled water techniques (58,76) generally support the notion that 60–90 min of moderate-intensity physical activity/day may be necessary for weight maintenance after such large weight losses.

In 2005 the US Departments of Health and Human Services and Agriculture published Dietary Guidelines for Americans 2005 (71) in which recommendations were included regarding the profiles of activity that would

contribute to 1) the protection against selected chronic diseases (≥ 30 min of moderate intensity exercise on most days), 2) prevention of unhealthy weight gain (approximately 60 min of moderate- to vigorous-intensity activity on most days), and 3) to sustain weight loss in adults who have lost substantial body weight (participate in at least 60–90 min of moderate-intensity activity daily). See Table 3 for a summary of these recommendations. These weight gain prevention guidelines come from the Institute of Medicine Report published in 2002 (26) and are similar to those published in the International Association for the Study of Obesity report in 2003 (“it seems likely that moderate intensity activity of approximately 45 to 60 minutes per day... is required to prevent the transition to overweight or obesity” and “prevention of weight regain in formally obese individuals requires 60–90 minutes of moderate intensity or lesser amounts of vigorous intensity activity” (57), page 101)). The DHHS guidelines are consistent with the prior CDC/ACSM guidelines (49) and this update in that a minimum of $30 \text{ min} \cdot \text{d}^{-1}$ of moderate-intensity on $5 \text{ d} \cdot \text{wk}^{-1}$ provides meaningful protection against various chronic diseases, that greater benefit is achieved by activity of greater duration and/or intensity, and that resistance exercise should be performed to enhance skeletal muscle strength and endurance.

Attempting to maintain a healthy weight is influenced by a complex set of cultural, psychosocial and biological factors making it difficult to accurately identify what the primary cause of obesity is for any individual. One can argue that people become obese because they consume more calories than they expend, but this does not tell us why the imbalance exists or the best way to correct it. Meaningful physical activity guidelines for the prevention of unhealthy weight gain or obesity will need to be effectively integrated with calorie intake guidelines. For most adults in the US today, consumption of calories is unimpeded while expenditure of calories via physical activity is difficult; thus it is unlikely that without some self restriction of calorie intake or expanded opportunities and greater encouragement for physical activity many people will become or continue to be overweight or obese. Development of such integrated “calorie balance” guidelines and specific strategies on how to effectively implement them should be a high priority for physical activity and nutrition professionals. In the mean time, because of

the documented obesity-independent benefits of regular physical activity (25,37,40), adults regardless of body size or shape should be encouraged to meet the moderate-intensity, minimum of $30 \text{ min} \cdot \text{d}^{-1}$ on $5 \text{ d} \cdot \text{wk}^{-1}$ guideline. For individuals who achieve this level of activity, but remain overweight, an increase in their physical activity is a reasonable component of any strategy to lose weight.

ADDITIONAL ISSUES

Risk of Physical Activity. Physically active adults tend to experience a higher incidence of leisure-time and sport related injuries than their less active counterparts (15). However, it appears that healthy adults who meet the present recommendations by performing moderate-intensity activities have an overall musculoskeletal injury rate that is not much different than inactive adults (11). More active men and women have a higher injury rate during sport and leisure-time activity while inactive adults report more injuries during nonsport and nonleisure time. A possible reason for this lower injury incidence during non-leisure time is the increased fitness levels (endurance, strength, balance) of the more active adults (23).

Risk of musculoskeletal injuries increases as the intensity and amount of the activity increases and can be as high as 55% among men and women involved in jogging programs (51) and U.S. Army basic training (29). Thus, while physical activity above the minimal recommendations results in additional health benefits, the associated musculoskeletal health risks are increased as well, possibly negating some of the added benefit. This dose-injury relation for specific activities is unknown and likely differs by activity and individual anatomic and behavioral characteristics (24).

As with musculoskeletal injuries, the risk of sudden cardiac arrest or myocardial infarction is very low in generally healthy adults during moderate-intensity activities (74,79). However, risk of cardiovascular complications increases transiently during vigorous physical exertion, especially for persons who have latent or documented coronary artery disease and are habitually sedentary (9). For example, Siscovick and associates (60) reported that the relative risk of cardiac arrest during vigorous exercise (jogging) compared with that at all other times of the day, was 56 times greater among men who exercise infrequently and only 5 times greater among men who exercise

TABLE 3. Physical activity recommendations included in the Dietary Guidelines for Americans 2005 (US Department of Health and Human Services, 2005).

Engage in regular physical activity and reduce sedentary activities to promote health, psychological well-being, and a healthy body weight.
To reduce the risk of chronic disease in adulthood: Engage in at least 30 min of moderate-intensity physical activity, above usual activity at work or home, on most days of the week.
For most people, greater health benefits can be obtained by engaging in physical activity of more vigorous intensity or longer duration.
To help manage body weight and prevent gradual, unhealthy body weight gain in adulthood: Engage in approximately 60 min of moderate- to vigorous-intensity activity on most days of the week while not exceeding caloric intake requirements.
To sustain weight loss in adulthood: Participate in at least 60–90 min of daily moderate-intensity physical activity while not exceeding caloric intake requirements. Some people may need to consult with a healthcare provider before participating in this level of activity.
Achieve physical fitness by including cardiovascular conditioning, stretching exercises for flexibility, and resistance exercises or calisthenics for muscle strength and endurance.

frequently. Despite the transient increases in the incidence of sudden death and acute myocardial infarction during vigorous intensity exercise, (20,43,60,81), it should be noted that, compared to their sedentary counterparts and those with low aerobic fitness, physically active or aerobically fit individuals have a 25% to 50% lower overall risk of developing cardiovascular disease (54,70,80).

Screening/Clearance. There is controversy regarding the utility of medical screening procedures such as exercise testing prior to initiating vigorous exercise programs. The ACSM recommends symptom-limited exercise testing before vigorous exercise ($>60\%$ $\dot{V}O_{2\max}$) is undertaken by men ≥ 45 yr and women ≥ 55 yr, those with 2 or more major cardiac risk factors, persons with any signs or symptoms of coronary artery disease, or those with known cardiac, pulmonary, or metabolic disease (6). However, few systematically collected data are available to substantiate this recommendation. Guidelines developed by the AHA and the American College of Cardiology underscore this lack of data (19). Also, a report in 2003 from the AHA indicated that exercise testing is not necessary for all people beginning a moderate intensity physical activity program (68). Moreover, guidelines from the U.S. Preventive Services Task Force discount the use of exercise test screening for heart disease in low-risk, asymptomatic adults (73). These recommendations and the extremely low rate of cardiovascular complications in asymptomatic persons while performing moderate-intensity activity (74,79), the poor predictive value of exercise testing for acute cardiac events (42), the high costs of mass exercise testing, and the uncertainties associated with interpreting abnormal electrocardiographic or cardiac imaging results in persons with a low pretest risk of coronary artery disease (63), indicate that it is impractical to use exercise testing to prevent serious cardiovascular events in all asymptomatic persons who exercise, especially during activities of moderate intensity.

Asymptomatic men and women who plan to be physically active at the minimum levels of moderate-intensity activity set forth in the present recommendation do not need to consult with a physician or health care provider prior to beginning unless they have specific medical ques-

tions. Symptomatic persons or those with any cardiovascular disease, diabetes, other active chronic disease, or any medical concern, should consult a physician or health care provider prior to any substantive increase in physical activity, particularly vigorous-intensity activity (68).

Promoting Physical Activity. Individually adapted behavior change is critical to facilitate a physically active lifestyle (31), but the process involves a multitude of complex variables, including personal, programmatic, social, environmental and related factors. To achieve long-term changes in health-related behaviors, these and medical factors must be addressed collectively (56). All healthcare professionals should broaden their advice to patients beyond the traditional prescriptive program based on medical clearance and supervision by initially encouraging them to accumulate moderate-intensity physical activity as specified in the present recommendation. A wide range of activities should be identified that meet each person's interests, needs, schedule and environment, take into consideration family, work and social commitments, with options for inclement weather and travel. Excellent materials for the education and counseling of clients are available from the National Institutes of Health (72), ACSM (5), and AHA (8). As information has increased about the role that environmental influences play in promoting or inhibiting physical activity even among the most motivated persons (31,56), future efforts to promote physical activity must consider how people interact with their environment (22). For all health professionals, the challenge is to leverage their professional credibility to enroll increasing numbers of participants in physical activity programs that are designed to overcome barriers to long-term adherence, using effective behavioral management and environmental change strategies, so that many more individuals will realize the benefits provided by a physically active lifestyle.

CONCLUSION

Frequent physical activity is an important behavior for individual and population health. See Table 4. To promote and maintain health, all healthy adults need to engage in

TABLE 4. Physical activity recommendations for healthy adults aged 18–65 yr—2007.

1. To promote and maintain good health, adults aged 18–65 yr should maintain a physically active lifestyle. I (A)
2. They should perform moderate-intensity aerobic (endurance) physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic activity for a minimum of 20 min on three days each week. I (A)
3. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. For example, a person can meet the recommendation by walking briskly for 30 min twice during the week and then jogging for 20 min on two other days. IIa (B)
4. These moderate- or vigorous intensity activities are in addition to the light intensity activities frequently performed during daily life (e.g., self care, washing dishes, using light tools at a desk) or activities of very short duration (e.g., taking out trash, walking to parking lot at store or office).
5. Moderate-intensity aerobic activity, which is generally equivalent to a brisk walk and noticeably accelerates the heart rate, can be accumulated toward the 30-min minimum by performing bouts each lasting 10 or more minutes. I (B)
6. Vigorous-intensity activity is exemplified by jogging, and causes rapid breathing and a substantial increase in heart rate.
7. In addition, at least twice each week adults will benefit by performing activities using the major muscles of the body that maintain or increase muscular strength and endurance. IIa (A)
8. Because of the dose-response relation between physical activity and health, persons who wish to further improve their personal fitness, reduce their risk for chronic diseases and disabilities, or prevent unhealthy weight gain will likely benefit by exceeding the minimum recommended amount of physical activity. I (A)

moderate-intensity aerobic physical activity for a minimum of 30 min·d⁻¹ on 5 d·wk⁻¹ or vigorous-intensity aerobic activity for a minimum of 20 min·d⁻¹ on 3 d·wk⁻¹. [I (A)] Combinations of moderate- and vigorous-intensity activity can be performed to meet these guidelines. [IIa (B)] For example, a person can meet the recommendation by walking briskly for 30 min twice during the week and then jogging for 20 min on two other days. Moderate-intensity aerobic physical activity, which is generally equivalent to a brisk walk and noticeably accelerates the heart rate, can be accumulated toward the 30-min minimum from bouts lasting 10 or more minutes. [I (B)] Vigorous-intensity activity is exemplified by jogging, and causes rapid breathing and a substantial increase in heart rate. This recommended amount of aerobic activity is in addition to routine activities of daily living that tend to be of light intensity or last less than 10 min in duration. In addition, every adult should perform activities that maintain or increase muscular

strength and endurance a minimum of two days each week. [IIa (A)] It is recommended that 8–10 exercises be performed on two or more nonconsecutive days each week using the major muscles of the body. Such activities include lifting weights, weight bearing calisthenics or similar resistance exercises that use the major muscle groups of the body. Because of the dose-response relation between physical activity and health, persons who wish to further improve their personal fitness, reduce their risk for chronic diseases and disabilities or prevent unhealthy weight gain may benefit by exceeding the minimum recommended amounts of physical activity. [I (A)].

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**B.9 Physical Activity and Public Health in Older Adults:
Recommendation from the American College of Sports Medicine
and the American Heart Association, Miriam E. Nelson, W. Jack
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Physical Activity and Public Health in Older Adults: Recommendation from the American College of Sports Medicine and the American Heart Association

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ABSTRACT

NELSON, M. E., W. J. REJESKI, S. N. BLAIR, P. W. DUNCAN, J. O. JUDGE, A. C. KING, C. A. MACERA, and C. CASTANEDA-SCEPPA. Physical Activity and Public Health in Older Adults: Recommendation from the American College of Sports Medicine and the American Heart Association. *Med. Sci. Sports Exerc.*, Vol. 39, No. 8, pp. 1435–1445, 2007. **Objective:** To issue a recommendation on the types and amounts of physical activity needed to improve and maintain health in older adults. **Participants:** A panel of scientists with expertise in public health, behavioral science, epidemiology, exercise science, medicine, and gerontology. **Evidence:** The expert panel reviewed existing consensus statements and relevant evidence from primary research articles and reviews of the literature. **Process:** After drafting a recommendation for the older adult population and reviewing drafts of the Updated Recommendation from the American College of Sports Medicine (ACSM) and the American Heart Association (AHA) for Adults, the panel issued a final recommendation on physical activity for older adults. **Summary:** The recommendation for older adults is similar to the updated ACSM/AHA recommendation for adults, but has several important differences including: the recommended intensity of aerobic activity takes into account the older adult's aerobic fitness; activities that maintain or increase flexibility are recommended; and balance exercises are recommended for older adults at risk of falls. In addition, older adults should have an activity plan for achieving recommended physical activity that integrates preventive and therapeutic recommendations. The promotion of physical activity in older adults should emphasize moderate-intensity aerobic activity, muscle-strengthening activity, reducing sedentary behavior, and risk management. **Key Words:** OLDER ADULTS, PHYSICAL ACTIVITY, BENEFITS, RISKS, HEALTH

In 1995 the Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) published a preventive recommendation that “Every US adult should accumulate 30 minutes or more of

moderate-intensity physical activity on most, preferably all, days of the week” (46). Subsequently, ACSM and the American Heart Association (AHA), in a companion paper (25) to the present article, provide an update to this recommendation. The update is more inclusive and provides recommendations for moderate-intensity aerobic activity, vigorous-intensity aerobic activity, and muscle-strengthening activity. It states explicitly that many adults should exceed the minimum recommended amount of activity.

In considering an update of the 1995 recommendation, ACSM deemed it appropriate to issue a separate recommendation for older adults (men and women age ≥ 65 yr and adults age 50 to 64 yr with clinically significant chronic conditions and/or functional limitations). Issues naturally arise about how to apply a recommendation intended mainly for the generally healthy adult population to older adults, who commonly have chronic medical

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conditions, low fitness levels, and/or functional limitations. In addition, the amount of scientific information on physical activity in older adults has grown rapidly. For example, a recent meta-analysis located 66 randomized trials of resistance exercise as the sole form of exercise for older adults (35). Older Americans are the least physically active of any age group (13) and generate the highest expenditures for medical care. Older Americans have been the most rapidly growing age group, yet more rapid growth in this group will occur in the next 20–30 yr when millions of baby boomers turn 65. The feasibility of attaining higher levels of physical activity in the population of older adults is encouraging in that recent trends, albeit modest, are on the upswing (14). It is possible that increasing levels of activity could reduce medical expenditures in this group within a year or so of the onset of behavior change (41).

The objectives of this article are to 1) provide a preventive recommendation on physical activity for older adults that consists of the updated ACSM/AHA recommendation for adults with additions and modifications appropriate for older adults; 2) explain and clarify the additions and modifications; and 3) discuss the promotion of physical activity in older adults so as to provide guidance about appropriate types and amounts of physical activity.

EXPERT PANEL PROCESS

In 1999, an expert panel was convened with the assistance and support of the International Life Sciences Institute (<http://www.ils.org>). The panel had expertise in public health, behavioral science, epidemiology, exercise science, medicine, and gerontology. The panel was initially charged with issuing a comprehensive preventive recommendation on physical activity for older adults that addressed aerobic, muscle-strengthening, flexibility, and balance activities, as well as the promotion of physical activity. The panel was instructed to base its recommendation on a review of primary research articles, literature reviews, existing preventive recommendations, and therapeutic recommendations. (Selected therapeutic recommendations are shown in Table 1.)

Panel members wrote background papers addressing components of the proposed recommendation, using their judgment to develop a strategy for locating and analyzing relevant evidence. The panelists relied as appropriate on earlier reviews of evidence, without repeating them. The panel did not undertake a full review of the evidence of the benefits of aerobic activity in the older population, because previous evidence-based recommendations for aerobic activity applied to all adults (61). But the panel considered whether modifications or clarifications were needed when applying these recommendations to older adults who commonly have chronic diseases, low fitness levels and/or functional limitations. Recommendations for muscle-

strengthening exercises, which applied to older adults, had also been issued by the 1990s (61). In 2001, a consensus statement dealt with the role of balance exercise in preventing falls among older adults (7). In that same year, an extensive evidence summary and consensus statement was published from a CDC/Health Canada Expert Panel meeting entitled "Dose-Response Aspects of Physical Activity and Health" (30). Three years earlier, ACSM had published positions stands for older adults (39) and for healthy adults (5), and ACSM regularly updated its guidelines for exercise prescription (20). Late in the process, the panel had access to draft conclusions of an expert panel convened by the University of Illinois at Chicago that had reviewed the evidence on the health effects of physical activity in older adults.

The background papers developed by the expert panel were discussed and critiqued by all members of the panel. In 2001, following regular discussions, the panel completed a draft of a preventive recommendation. Shortly thereafter, ACSM/AHA agreed to update the 1995 CDC/ACSM recommendation for adults. Issuing a separate older adult recommendation had the risk of causing confusion, if it was not consistent with the updated adult recommendation. Hence, the panel was given a revised charge of issuing an older adult recommendation, which was consistent with the updated recommendation for adults. Both recommendations would be issued simultaneously.

Given drafts of an update to the 1995 recommendation for adults, in 2004 the panel on older adults synthesized a companion recommendation. Manuscripts describing both recommendations were circulated for comments, revised, and edited for consistency, prior to review and approval by ACSM and AHA.

In its recommendation for older adults, the panel used terms as they are defined conventionally (20,62). With the exception that only exercise is recommended to improve balance, the recommendation uses "physical activity" to indicate that exercise programs are not the only way to meet the recommendation. Additionally, because of its focus on older adults, the text uses the terms impairments, functional limitations, and disability (50). Impairments refer to abnormalities at the level of tissues, organs, and body systems, whereas functional limitations are deficits in the ability to perform discrete tasks such as climbing stairs. Disability on the other hand is a functional limitation expressed in a social context such as the inability to clean one's home or to shop independently.

RECOMMENDATION STATEMENT

The following recommendation for older adults describes the amounts and types of physical activity that promote health and prevent disease. The recommendation applies to all adults aged 65+ years, and to adults aged 50–64 with clinically significant chronic conditions or functional limitations that affect movement ability, fitness, or physical activity. For the

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TABLE 1. Summary of selected preventive or therapeutic recommendations for aerobic activity, muscle-strengthening activity, flexibility activity, and balance exercises.

Recommendation	Aerobic Activity		Muscle-Strengthening Activity			Flexibility/Balance
	Frequency	Intensity	Duration	Frequency	Number of Exercises	Sets and Repetitions
Healthy adults, 2007, ACSM/AHA (25) (companion recommendation to 2007 older adult recommendation)	A minimum of 5 d·wk ⁻¹ for moderate intensity, or a minimum of 3 d·wk ⁻¹ for vigorous intensity	Moderate intensity between 3.0 and 6.0 METS; vigorous intensity above 6.0 METS	Accumulate at least 30 min·d ⁻¹ of moderate-intensity activity, in bouts of at least 10 min each; continuous vigorous activity for at least 20 min·d ⁻¹	At least 2 d·wk ⁻¹	8–10 exercises involving the major muscle groups	8–12 repetitions
Older adults, 2007, ACSM/AHA Recommendation (described in present paper)	A minimum of 5 d·wk ⁻¹ for moderate intensity, or a minimum of 3 d·wk ⁻¹ for vigorous intensity	Moderate intensity at 5 to 6 on a 10-point scale; vigorous intensity at 7 to 8 on 10-point scale	Accumulate at least 30 min·d ⁻¹ of moderate-intensity activity, in bouts of at least 10 min each; continuous vigorous activity for at least 20 min·d ⁻¹	At least 2 d·wk ⁻¹	8–10 exercises involving the major muscle groups	10–15 repetitions
Bone Health and Osteoporosis: A Report of the Surgeon General, 2004 (64)	A minimum of 3 d·wk ⁻¹	Begin slowly and work up to 60 to 85% of maximal heart rate	Accumulate at least 30 min·d ⁻¹ of moderate-intensity physical activity on most, preferably all, days of the week; those who have been inactive should start with 5–10 min of activity per day	2–3 d·wk ⁻¹ or strength training	A progressive program of weight training that uses all muscle groups	Sufficient intensity to improve muscle strength; increase amount of weight lifted gradually over time
Older adults, 1999, Health Canada (26)	4–7 d·wk ⁻¹	Moderate intensity, but may progress to vigorous	Accumulate 30 to 60 min of moderate-intensity activity in bouts of at least 10 min each	2–4 d·wk ⁻¹		Weights that a person can lift 10 times “before they become too heavy”
Coronary artery disease, 2001, American Heart Association (aerobic recommendation) (19)	At least 3 d·wk ⁻¹	Moderate intensity at 40–60% of HR reserve; vigorous intensity as tolerated at 60–85% of HR reserve	At least 30 min			Daily flexibility, and balance activities

(continued on next page)

SPECIAL COMMUNICATIONS

SPECIAL COMMUNICATIONS

TABLE 1. (Continued)

Recommendation	Aerobic Activity		Muscle-Strengthening Activity			
	Frequency	Intensity	Duration	Frequency	Number of Exercises	Sets and Repetitions
Cardiovascular disease, 2000. American Heart Association (flexibility and resistance training recommendation) (49)						
Hypertension, 2004, ACSN (6)	Most, preferably all days per week	Moderate intensity at 40–60% of $\dot{V}O_{2max}$ (vigorous intensity acceptable for selected adults)	Accumulate 30–60 min d^{-1} of moderate-intensity activity in bouts of at least 10 minutes each	2–3 $d \cdot wk^{-1}$ (resistance training an adjunct to aerobic activity)	8–10 exercises involving the major muscle groups	1 set of 8–15 reps (may progress to >1 set)
Type 2 diabetes, 2004, American Diabetes Association (64)	At least 3 $d \cdot wk^{-1}$ with no more than 2 consecutive days without activity	Moderate intensity at 50–70% of HR_{max} ; vigorous intensity at >70% of HR_{max}	At least 150 min wk^{-1} of moderate-intensity and/or at least 90 min wk^{-1} of vigorous intensity	3 $d \cdot wk^{-1}$	All major muscle groups	Progress to 3 sets of 8–10 reps; use a weight that cannot be lifted >8–10 times
Cholesterol, 2001, National Cholesterol Education Program (66) recommended physical activity as in 2000 Dietary Guidelines (65)	Most days of the week, preferably daily	Moderate intensity	At least 30 min d^{-1}	Muscle-strengthening activities recommended as beneficial		Flexibility regarded as beneficial
Stroke, 2004, American Heart Association (23)	3–7 $d \cdot wk^{-1}$	50–80% of HR_{max}	20–60 min/session (or multiple 10 min sessions)	2–3 $d \cdot wk^{-1}$	8–10 exercises involving the major muscle groups	1–3 sets of 10–15 reps
Osteoarthritis, 2001, American Geriatrics Society (8)	3–5 $d \cdot wk^{-1}$	50–60% of HR_{max}	Begin with 20–30 min d^{-1} (if possible) and progress as appropriate	2–3 $d \cdot wk^{-1}$ for isotonic resistance exercises (isometric exercises also recommended)	8–10 isotonic exercises involving the major muscle groups (isometric exercises also recommended)	6–15 reps of isotonic exercises, depending upon intensity; begin with one set and progress as appropriate

Abbreviations: ACSM, American College of Sports Medicine; HR_{max} , maximal heart rate; HR, heart rate; $\dot{V}O_{2max}$, maximal aerobic capacity; Reps, repetitions. Note: Only one indicator of aerobic intensity is provided in the table, even if the recommendation provided several (comparable) indicators. Some recommendations were for strength-training activity rather than exercise per se. For comparability, when sufficient information was provided in the recommendation, recommendations for muscle-strengthening activity were all summarized in the form of an exercise program that specifies number of sets and number of repetitions per set of the movement performed against resistance.

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purposes of this recommendation, a chronic condition is "clinically significant" if a person receives (or should receive) regular medical care and treatment for it. A functional limitation is "clinically significant" if it impairs the ability to engage in physical activity. Thus, adults age 50–64 with chronic conditions that do not affect their ability to be active (e.g., controlled hypertension) would follow the adult recommendation (25). The parts of the recommendation below that are not italicized repeat the recommendation for adults, meaning these parts apply to all adults; the italicized parts are specific for older adults. Classification of recommendations and level of evidence are expressed in American College of Cardiology/American Heart Association (ACC/AHA) format as defined in Table 2 and the *Methodology Manual for ACC/AHA Guideline Writing Committees* (3).

Regular physical activity, including aerobic activity and muscle-strengthening activity, is essential for healthy aging. This preventive recommendation specifies how older adults, by engaging in each recommended type of physical activity, can reduce the risk of chronic disease, premature mortality, functional limitations, and disability.

Aerobic activity. To promote and maintain health, older adults need moderate-intensity aerobic physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic activity for a minimum of 20 min on three days each week. [I (A)] Also, combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. [IIa (B)] *Moderate-intensity aerobic activity involves a moderate level of effort relative to an individual's aerobic fitness. On a 10-point scale, where sitting is 0 and all-out effort is 10, moderate-intensity activity is a 5 or 6 and produces noticeable increases in heart rate and breathing. On the same scale, vigorous-intensity activity is a 7 or 8 and produces large increases in heart rate and breathing. For example, given the heterogeneity of fitness levels in older adults, for some older adults a moderate-intensity walk is a slow walk, and for others it is a brisk walk. This recommended amount of aerobic activity is in addition to routine activities of daily living of light-intensity (e.g., self care, cooking, casual walking or shopping) or moderate-intensity activities lasting less than 10 min in duration (e.g., walking around home or office, walking from the parking lot).*

Muscle-strengthening activity. To promote and maintain health and physical independence, older adults will

benefit from performing activities that maintain or increase muscular strength and endurance for a minimum of two days each week. [IIa (A)] It is recommended that 8–10 exercises be performed on two or more nonconsecutive days per week using the major muscle groups. *To maximize strength development, a resistance (weight) should be used that allows 10–15 repetitions for each exercise. The level of effort for muscle-strengthening activities should be moderate to high. On a 10-point scale, where no movement is 0, and maximal effort of a muscle group is 10, moderate-intensity effort is a 5 or 6 and high-intensity effort is a 7 or 8. Muscle-strengthening activities include a progressive-weight training program, weight bearing calisthenics, and similar resistance exercises that use the major muscle groups.*

Benefits of greater amounts of activity. Participation in aerobic and muscle-strengthening activities above minimum recommended amounts provides additional health benefits and results in higher levels of physical fitness. [I (A)] *Older adults should exceed the minimum recommended amounts of physical activity if they have no conditions that preclude higher amounts of physical activity, and they wish to do one or more of the following; (a) improve their personal fitness, (b) improve management of an existing disease where it is known that higher levels of physical activity have greater therapeutic benefits for the disease, and/or (c) further reduce their risk for premature chronic health conditions and mortality related to physical inactivity. In addition, to further promote and maintain skeletal health, older adults should engage in extra muscle strengthening activity and higher-impact weight-bearing activities, as tolerated. [IIa (B)] To help prevent unhealthy weight gain, some older adults may need to exceed minimum recommended amounts of physical activity to a point that is individually effective in achieving energy balance, while considering diet and other factors that affect body weight. [IIa (B)]*

Flexibility activity. *To maintain the flexibility necessary for regular physical activity and daily life, older adults should perform activities that maintain or increase flexibility on at least two days each week for at least 10 min each day. [IIb (B)]*

Balance exercise. *To reduce risk of injury from falls, community-dwelling older adults with substantial risk of falls (e.g., with frequent falls or mobility problems) should perform exercises that maintain or improve balance. [IIa (A)]*

TABLE 2. ACC/AHA approach to assigning the classification of recommendations and level of evidence.

Classifications of recommendation (COR) I, II, and III are used to summarize indications (suggested phrases for writing recommendations)
Class I: Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective (should; is recommended; is indicated; is useful/effective, beneficial)
Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment
IIa: Weight of evidence/opinion is in favor of usefulness/efficacy (is reasonable; can be useful, effective or beneficial; is probably recommended or indicated)
IIb: Usefulness/efficacy is less well established by evidence/opinion (may/might be considered, may/might be reasonable, usefulness/effectiveness is unknown, unclear/uncertain or not well established)
Class III: Conditions for which there is evidence and/or general agreement that the procedure/treatment is not useful/effective and in some cases may be harmful (is not recommended; is not indicated; should not; is not useful/effective, beneficial; may be harmful)
Levels of evidence (LOE) for individual class assignments (with suggested language to be used with each level)
A: Data derived from multiple randomized clinical trials
B: Data derived from a single randomized trial or from nonrandomized studies
C: Consensus opinion of experts

Integration of preventive and therapeutic recommendations. *Older adults with one or more medical conditions for which physical activity is therapeutic should perform physical activity in the manner that effectively and safely treats the condition(s).* [IIa (A)] *So as to prevent other conditions from developing, older adults should also perform physical activity in the manner recommended for prevention as described herein. When chronic conditions preclude activity at minimum recommended levels for prevention, older adults should engage in regular physical activity according to their abilities and conditions so as to avoid sedentary behavior.*

Activity plan. *Older adults should have a plan for obtaining sufficient physical activity that addresses each recommended type of activity.* [IIa (C)] *In addition, to specifying each type of activity, care should be taken to identify, how, when, and where each activity will be performed. Those with chronic conditions for which activity is therapeutic should have a single plan that integrates prevention and treatment. For older adults who are not active at recommended levels, plans should include a gradual (or stepwise) approach to increase physical activity over time using multiple bouts of physical activity (≥ 10 min) as opposed to continuous bouts when appropriate. Many months of activity at less than recommended levels is appropriate for some older adults (e.g., those with low fitness) as they increase activity in a stepwise manner. Older adults should also be encouraged to self-monitor their physical activity on a regular basis and to re-evaluate plans as their abilities improve or as their health status changes.*

BENEFITS OF REGULAR PHYSICAL ACTIVITY IN OLDER ADULTS

The benefits of regular physical activity in older adults are extensive. As noted in the adult recommendation (25), regular physical activity reduces risk of cardiovascular disease, thromboembolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety, and depression. Of particular importance to older adults, there is substantial evidence that physical activity reduces risk of falls and injuries from falls (7), prevents or mitigates functional limitations (30,31,37,44), and is effective therapy for many chronic diseases. Clinical practice guidelines identify a substantial therapeutic role for physical activity in coronary heart disease (19,49,59), hypertension (6,15,59), peripheral vascular disease (42), type 2 diabetes (54), obesity (66), elevated cholesterol (21,59), osteoporosis (22,64), osteoarthritis (4,8), claudication (57), and chronic obstructive pulmonary disease (47). Clinical practice guidelines identify a role for physical activity in the management of depression and anxiety disorders (11), dementia (17), pain (2), congestive heart failure (51), syncope (10), stroke (23), prophylaxis of venous thromboembolism (53), back pain (24), and constipation (38). There is some evidence that physical

activity prevents or delays cognitive impairment (1,34,67) and disability (31,48,55,60), and improves sleep (32,56).

The 2001 consensus statement on the dose-response relationship between physical activity and health applies to all adults (though the statement notes that the effect of age on dose-response relationships has not been carefully studied) (30). As an example of studies providing evidence of a dose-response relationship in older adults, at least 33 of 44 papers that provided data on the dose-response relationship between physical activity and all cause mortality either recruited adults age 65 and over, or followed cohorts of adults over time until a substantial percentage were age 65 and over at the end of follow-up (28,36).

The recommendation for older adults states that greater volumes of aerobic activity help prevent unhealthy weight gain. The dose-response consensus panel found evidence that increased levels of physical activity are associated with prevention of weight gain, but the nature of the dose-response relationship was unclear, and in general there was insufficient information on whether age modified dose-response relationships (30). The recommendation in the 2005 Dietary Guidelines that additional physical activity helps prevent unhealthy weight gain applies to older adults (65).

DIFFERENCES BETWEEN THE OLDER ADULT AND ADULT RECOMMENDATIONS

Definition of aerobic intensity. The adult recommendation defines aerobic intensity in absolute terms, e.g., moderate intensity comprises 3.0 to 6.0 MET activities. A different definition of aerobic intensity is appropriate for older adults, because fitness levels can be low. For example, performing 3.0 to 6.0 MET activities either requires relatively vigorous effort or is impossible for older adults with low fitness. The older adult recommendation defines aerobic intensity as relative to fitness, in the manner of an exercise prescription. For aerobic exercise, ACSM recommends a target intensity of 50–85% of oxygen uptake reserve—a range that includes both moderate and vigorous exercise (20). If oxygen reserve is measured on a 10 point scale, then moderate intensity begins at around “5” (50%), and the range of vigorous intensity does not quite reach “9” (90%). Simply telling older adults that their perceived effort during activity should be 5–6 (or 7–8) on a 10-point scale may not achieve the desired level of effort. Subjective perception of effort is related to objectively measured level of effort, but not linearly (9). When there is concern an adult will not engage in activity at the desired intensity, a period of supervised exercise can help the adult learn the desired level of effort.

Muscle-strengthening activities. The recommendation specifies the intensity (level of effort) of activities that maintain and increase muscle strength. For adults generally, ACSM recommends resistance training of moderate intensity (20). High intensity training is an option for older adults, preferably in supervised settings or in adults

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with sufficient fitness, experience, and knowledge of resistance exercise. Historically, people have increased and maintained their strength through purposeful physical activity, such as manual labor on a farm. Today, older adults will commonly elect to meet the muscle-strengthening recommendation through exercise programs involving such activities as weight bearing calisthenics or progressive weight training. For resistance exercise, ACSM recommends performing at least one set of repetitions for 8–10 exercises that train the major muscle groups, and recommends exercise for each muscle group occur on two or three nonconsecutive days each week (20). Experts recommend 10 to 15 (as opposed to 8–12) repetitions per set for older adults (20).

Flexibility activities. Flexibility activity is recommended to maintain the range of motion necessary for daily activities and physical activity. Unlike aerobic and muscle strengthening activities, specific health benefits of flexibility activities are unclear. For example, it is not known if flexibility activities reduce risk of exercise-related injury (58). In addition, few studies have documented the age-related loss of range of motion in healthy older adults. However, flexibility exercises have been shown to be beneficial in at least one randomized trial and are recommended in the management of several common diseases in older adults (Table 1) (33). At least 10 min of flexibility activities is recommended based upon the time required for a general stretching routine involving major muscle and tendon groups with 10–30 s for a static stretch and 3–4 repetitions for each stretch (20). Preferably, flexibility activities are performed on all days that aerobic or muscle-strengthening activity is performed.

Balance exercise. The recommendation for balance exercise is consistent with a clinical practice guideline published in 2001 (7). In community-living older adults at risk for falls (e.g., with frequent falls or mobility problems), multi-component interventions that include regular physical activity are effective in preventing falls (7). Physical activity, by itself, may reduce falls and fall injuries as much as 35–45% (52). Because research has focused on balance exercise rather than balance activity (e.g., dancing), only exercise is currently recommended (7). The preferred types, frequency, and duration of balance training are unclear and not specified in the clinical guideline (7). Balance exercise three times each week is one option, as this approach was effective in a series of four fall prevention studies (52). The recommendation applies only to community-dwelling older adults because of insufficient data in long-term care settings and hospital settings. The guideline for prevention of falls does not specify an age cutoff (7), but there are few data on the effects of physical activity on falls in adults less than age 65.

Integration of preventive and therapeutic recommendations. Older adults should perform physical activity in the manner recommended for prevention as described herein. Older adults also commonly have chronic

conditions (Table 3) for which physical activity is therapeutic. Hence, many older adults require an activity plan that integrates preventive and therapeutic recommendations. Integration is facilitated by the fact preventive recommendations are similar to therapeutic recommendations for many common diseases, including coronary artery disease, hypertension, type 2 diabetes, stroke, high cholesterol, osteoporosis, and/or osteoarthritis (Table 1). In adults with no activity limitations, the activity plan specifies aerobic, muscle-strengthening, and flexibility activities (and possibly balance exercise), with types and amounts that meet both preventive and therapeutic recommendations. To illustrate combining recommendations, an activity recommendation for a person with osteoporosis would start with the preventive recommendation for aerobic, muscle strengthening, and balance activities, but emphasize weight bearing activities, and add high impact activities like jumping for those who tolerate them (64). Adjustments in the activity plan for a person with arthritis of moderate severity could involve in combination with strength training tailoring the number of aerobic activity days to 3–5 as tolerated every other day (8).

It is more challenging for a person with activity limitations to develop a physical activity plan, which combines preventive and therapeutic recommendations. In 1999, 20% of Medicare enrollees had impairment in IADLs (instrumental activities of daily living) or ADLs (activities of daily living) or were institutionalized (18). Inability to walk 2–3 blocks was reported by 14% of men and 23% of women (18). Clearly, a target level of physical activity below that of the typical preventive and therapeutic recommendations in Table 1 is appropriate for a subgroup of older adults. An assessment of the nature of the activity limitation and of the capability and preferences of the person will determine the target activity level and other details of the activity plan. Often the plan will rely on health care and community resources designed for people with activity limitations, such as cardiac rehabilitation and pulmonary rehabilitation centers, and exercise classes specifically designed for adults with arthritis.

TABLE 3. Percent of older adults with selected chronic conditions in 1995 and 2001–2002.

Condition	Age 55–65	Age 65+	Age 65+
	1995	1995	2001–2002
Arthritis	32.8	48.9	n/a
Hypertension	28.9	40.3	50.2
Heart disease	18.0	30.8	31.4
Selected respiratory diseases	13.7	13.8	n/a
Diabetes mellitus	9.7	12.6	15.5
Cerebrovascular disease	2.5	7.1	8.9
Osteoporosis*			
Women		26.1	
Men		3.8	

Note: n/a = not available; selected respiratory diseases include chronic bronchitis, asthma, and emphysema. Percents for 1995 are based on self-reported data from National Health Interview Survey (16). Percents for 2001–2002 are based on self-reported data from National Health Interview Survey (18).

*Data for osteoporosis are from examinations conducted in 1988–1994 and are cited in the Surgeon General's report *Bone Health and Osteoporosis* (64).

Need for an activity plan. An activity plan identifies recommended levels of physical activity for a specific person and describes how the person intends to meet them. It is recommended that older adults with chronic conditions develop an activity plan in consultation with a health care provider so that the plan adequately takes into account therapeutic and risk management issues related to chronic conditions. The plan should be tailored according to chronic conditions and activity limitations, risk for falls, individual abilities and fitness, strategies for minimizing risks of activity, strategies for increasing activity gradually over time (if the person is not active at recommended levels), behavioral strategies for adhering to regular physical activity, and individual preferences. Healthy, asymptomatic older adults without chronic conditions should also develop an activity plan, preferably in consultation with a health care provider or fitness professional, so as to take advantage of expertise and resources on physical activity and injury prevention. This recommendation reframes the common advice to consult a health care provider before starting to increase physical activity. Health provider consultation regarding physical activity should occur regardless of whether an adult currently plans to increase physical activity, as it is part of the ongoing process of promoting physical activity that should occur in geriatric medicine. This recommendation is consistent with a recently developed quality of care measure for older adults that measures whether older adults discuss physical activity with a health care provider at least once a year (43).

AREAS OF EMPHASIS IN PROMOTING PHYSICAL ACTIVITY IN OLDER ADULTS

With sufficient skill, experience, fitness, and training, older adults can achieve high levels of physical activity. The promotion of physical activity in older adults should avoid ageism that discourages older adults from reaching their potential. At the same time, it is difficult or impossible for some older adults to attain high levels of activity. Several areas should be emphasized in promoting physical activity in older adults as described below.

Reducing sedentary behavior. There is substantial evidence that older adults who do less activity than recommended still achieve some health benefits. Such evidence is consistent with the scientific consensus for a continuous dose-response relationship between physical activity and health benefits (30). For example, lower risks of cardiovascular disease have been observed with just 45–75 min of walking per week (40).

Increasing moderate activity and giving less emphasis to attaining high levels of activity. Realistic goals for aerobic activity will commonly be in the range of 30–60 min of moderate-intensity activity a day, as illustrated by the Health Canada recommendation for older adults (26) (Table 1). Vigorous activity has higher risk of injury and lower adherence (20). Age-related loss of fitness, chronic

diseases, and functional limitations act as barriers to attaining high levels of activity. Vigorous activity and/or high levels of activity are appropriate for selected older adults with sufficient fitness, experience, and motivation.

Taking a gradual or stepwise approach. The standard advice to increase physical activity gradually over time is highly appropriate and particularly important for older adults. This advice minimizes risk of overuse injury, makes increasing activity more pleasant, and allows positive reinforcement for small steps that lead to attainment of intermediate goals. It can be appropriate for older adults to spend a long time at one step (e.g., attending exercise classes two or three days a week) so as to gain experience, fitness, and self-confidence. Very deconditioned older adults may need to exercise initially at less effort than a “5” on a

TABLE 4. Summary of physical activity recommendations for older adults – 2007.

1. To promote and maintain good health, older adults should maintain a physically active lifestyle. I (A)
2. They should perform moderate-intensity aerobic (endurance) physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic activity for a minimum of 20 min on three days each week. I (A) Moderate-intensity aerobic activity involves a moderate level of effort relative to an individual's aerobic fitness. On a 10-point scale, where sitting is 0 and all-out effort is 10, moderate-intensity activity is a 5 or 6 and produces noticeable increases in heart rate and breathing. On the same scale, vigorous-intensity activity is a 7 or 8 and produces large increases in heart rate and breathing. For example, given the heterogeneity of fitness levels in older adults, for some older adults a moderate-intensity walk is a slow walk, and for others it is a brisk walk.
3. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. IIa (B) These moderate- or vigorous intensity activities are in addition to the light intensity activities frequently performed during daily life (e.g., self care, washing dishes) or moderate-intensity activities lasting 10 min or less (e.g., taking out trash, walking to parking lot at store or office).
4. In addition, at least twice each week older adults should perform muscle strengthening activities using the major muscles of the body that maintain or increase muscular strength and endurance. IIa (A) It is recommended that 8–10 exercises be performed on at least two nonconsecutive days per week using the major muscle groups. To maximize strength development, a resistance (weight) should be used that allows 10–15 repetitions for each exercise. The level of effort for muscle-strengthening activities should be moderate to high.
5. Because of the dose-response relationship between physical activity and health, older persons who wish to further improve their personal fitness, reduce their risk for chronic diseases and disabilities, or prevent unhealthy weight gain will likely benefit by exceeding the minimum recommended amount of physical activity. I (A)
6. To maintain the flexibility necessary for regular physical activity and daily life, older adults should perform activities that maintain or increase flexibility on at least two days each week for at least 10 min each day. IIb (B)
7. To reduce risk of injury from falls, community-dwelling older adults with substantial risk of falls should perform exercises that maintain or improve balance. IIa (A)
8. Older adults with one or more medical conditions for which physical activity is therapeutic should perform physical activity in a manner that effectively and safely treats the condition(s). IIa (A)
9. Older adults should have a plan for obtaining sufficient physical activity that addresses each recommended type of activity. IIa (C) Those with chronic conditions for which activity is therapeutic should have a single plan that integrates prevention and treatment. For older adults who are not active at recommended levels, plans should include a gradual (or stepwise) approach to increase physical activity over time. Many months of activity at less than recommended levels is appropriate for some older adults (e.g., those with low fitness) as they increase activity in a stepwise manner. Older adults should also be encouraged to self-monitor their physical activity on a regular basis and to reevaluate plans as their abilities improve or as their health status changes.

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