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Copenhagen Consensus statement 2019: physical activity and ageing

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ABSTRACT

From 19th to 22nd November 2018, 26 researchers representing nine countries and a variety of academic disciplines met in Snekkersten, Denmark, to reach evidence-based consensus about physical activity and older adults. It was recognised that the term 'older adults' represents a highly heterogeneous population. It encompasses those that remain highly active and healthy throughout the life-course with a high intrinsic capacity to the very old and frail with low intrinsic capacity. The consensus is drawn from a wide range of research methodologies within epidemiology, medicine, physiology, neuroscience, psychology and sociology, recognising the strength and limitations of each of the methods. Much of the evidence presented in the statements is based on longitudinal associations from observational and randomised controlled intervention studies, as well as quantitative and qualitative social studies in relatively healthy community-dwelling older adults. Nevertheless, we also considered research with frail older adults and those with age-associated neurodegenerative diseases, such as Alzheimer's and Parkinson's disease, and in a few cases molecular and cellular outcome measures from animal studies. The consensus statements distinguish between physical activity and exercise. *Physical activity* is used as an umbrella term that includes both structured and unstructured forms of leisure, transport, domestic and work-related activities. Physical activity entails body movement that increases energy expenditure relative to rest, and is often characterised in terms of intensity from light, to moderate to vigorous. *Exercise* is defined as a subset of structured physical activities that are more specifically designed to improve cardiorespiratory fitness, cognitive function, flexibility balance, strength and/or power. This statement presents the consensus on the effects of physical activity on older adults' fitness, health, cognitive functioning, functional capacity, engagement, motivation, psychological well-being and social inclusion. It also covers the consensus on physical activity implementation strategies. While it is recognised that adverse events can occur during exercise, the risk can be minimised by carefully choosing the type of activity undertaken and by consultation with the individual's physician when warranted, for example, when the individual is frail, has a number of co-morbidities, or has exercise-related symptoms, such as chest pain, heart arrhythmia or dizziness. The consensus was obtained through an iterative process that began with the presentation of the state-of-the-science in each domain, followed by group and plenary discussions. Ultimately, the participants reached agreement on the 30-item consensus statements.

STATEMENTS

Theme 1: functional capacity and health

1. Being physically active is a key factor in maintaining health and in normal functioning of physiological systems across the life-course.
2. Physically active older adults, compared with older inactive adults, show benefits in terms of physical and cognitive function, intrinsic capacity, mobility, musculoskeletal pain, risk of falls and fractures, depression, quality of life and compression of disability.
3. Physical inactivity in older adults is associated with a trajectory towards disease and increased risk of premature all-cause mortality. The conditions and diseases (and their key risk factors) include metabolic dysfunction, cardiovascular diseases, some types of cancer and sarcopenia. Together this translates into increased years of ill health.
4. In older adults who have not previously been active, evidence shows that multiple physiological systems will be improved by increasing physical activity and undertaking exercise training programmes. In addition, exercise can be used to improve functional capacity, as an adjunct treatment for many diseases and for rehabilitation.
5. Compared with inactive older adults, lifelong physically active older adults have higher levels of physiological function. This includes the metabolic, skeletal, cardiovascular and immune systems.
6. Emerging evidence suggests that the benefits for older adults (eg, better physical function and reduced premature mortality) can be realised at lower volume and lower intensity than the often-used guidelines of 150 min of moderate to vigorous intensity physical activity per week. There is, however, a positive dose response with regard to volume and intensity of the exercise.
7. The heterogeneity among older people means that tailored strategies for physical activity

and/or exercise are likely to be required for physiological benefits.
8. Sedentary behaviour may be an independent risk factor of health for older adults. However, evidence is needed on the health benefits of replacing sedentary behaviour with activity.
9. It is unclear whether previously inactive older individuals who undertake physical activity/exercise programmes will be able to reach the levels of physiological function of life-long exercisers.
10. In acknowledging the heterogeneity of the older adult population, we agreed that further research is required to determine the precise exercise modality, for example, resistance, balance, flexibility, aerobic exercise, or a combination of modalities, and what durations and intensities of exercise will be required for optimal benefits.

Theme 2: brain health and cognitive function

11. Physical activity has proven benefits for cognitive and brain health in older adults.
12. Observational studies provide consistent evidence that age-associated cognitive decline and neurodegeneration (also observed in eg, Alzheimer Disease, Parkinson's disease) may be slowed or delayed in physically active adults.
13. Acute moderate-intensity physical activity for older adults (eg, of 10 min duration) results in short-term benefits for cognitive performance and functional brain responses.
14. From randomised control trial studies with older adults that typically involve around 3 hours of training/physical activity per week over periods ranging from a few months to a year, there is modest and growing evidence for improvements in brain structure and function, and cognitive, perceptual and motor skills.
15. From randomised control trial studies in older animals, the molecular and cellular brain mechanisms underpinning physical activity benefits are more clearly elucidated; these involve functional and structural brain plasticity.
16. Interventions with older adults often employ aerobic type activities, so more evidence is needed on other types of physical activity including resistance training, balance, postural control, active games and a combination of these.

Theme 3: behaviour change, intention and habits

17. Self-efficacy, intention, depression (negative), objective and self-reported health are consistently associated with physical activity for older adults.
18. Physical activity behaviour change interventions with older adults result in modest increases in behaviour in the short term (up to 6 months). Longer term sustainability of these changes in physical activity has yet to be established.
19. Interventions with older adults that are based on established behaviour change theory produce more consistent effects.
20. No one behaviour change theory is more effective than any other in promoting physical activity in older adults.
21. Interventions with older adults that combine both behavioural and cognitive behaviour change techniques are more effective than interventions that only use one.
22. Emerging evidence suggests emotion and habits are also important correlates of regular physical activity for older adults. Future research needs to examine the potential of targeting these factors in promoting physical activity.
23. The effectiveness of physical activity behaviour change interventions for older adults generalises across mode of delivery, setting and professional background of the person delivering the intervention.
24. Physical activity is an individual behaviour that is influenced by interpersonal, environmental and policy factors.

Theme 4: sociological perspectives

25. Social and structural inequalities influence levels of participation in the practices of being physically active among older adults.
26. Lifelong subjective experiences of physical activity shape older adults' understandings and practices of physical activity.
27. When physical activity is meaningful to them, older adults are more likely to continue participation.
28. Older adults can remain or become active where there are supportive physical, social and cultural environmental features.
29. Safe, walkable and aesthetically pleasing neighbourhoods can afford older adults the opportunity for participation in physical activity.
30. Lifelong physical activity experiences and habits have an influence on participation in later life. More studies are required and these should include natural experiments which pay heed to the way's subjective experiences across the life course, including transitions between life-situations, shape physical activity routines in old age.

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