

Physical activity, sedentary behaviour and markers of cardiovascular and brain diseases

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Chapter eight

Impact paragraph

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The impact of this research involves several domains, like scientific, social and economic. In this chapter, I will discuss the impact on all of these domains.

Physical activity guidelines of the WHO recommend at least 150 minutes of moderate-to-vigorous intensity physical activity throughout the week.¹ The Dutch physical activity guidelines recommend to spread the 150 minutes of moderate-to-vigorous intensity physical activity over several days a week.² Our studies suggest that moderate-to-vigorous intensity physical activity regularly spread over the week, is associated with better health outcomes. However, this was not consistent for all outcomes. It would be an opportunity to do more research, in longitudinal datasets and by randomised controlled trials to investigate at different patterns (in different intensities) of physical activity. Also the guidelines of physical activity (WHO and Dutch) can stress more and clearly on the important part of the regularity of moderate-to-vigorous intensity physical activity, which is associated with better health outcomes.

Unfortunately, a lot of people do not meet the advised amount of physical activity¹, As described in this thesis, this affects the risk of disease, but by extension also burdens healthcare costs. By putting more emphasis on prevention through physical activity, healthcare costs could be reduced. In particular as performing physical activity is generally free or carries very low costs. It could be of interest to study whether it is beneficial for health insurance to stimulate and pay physical activity coaching to prevent disease and ultimately lower healthcare costs.

The LiPAT trial has demonstrated that it is difficult to coach individuals to achieve more physical activity. This raises the question which types and intensity of coaching can give a sustainable lifestyle behaviour? To study this, further clinical trials will be needed to test different types and intensities of coaching to reduce sedentary time and increase physical activity.

Physical activities in subgroups of patients

The benefit of physical activity for health is important for everybody, but our studies suggest that it is particularly important for individuals with type 2 diabetes. So including physical activity in the clinical treatment of individuals with type 2 diabetes is of great importance. This should also be reflected in the physical activity guidelines. But, the motivation of the patients is essential in succeeding a behaviour change. Medical staff

can always refer the patient to a physical therapist for coaching. In addition, future research into physical activity and sedentary behaviour should consider differences in glucose metabolism status (if applicable).

In chapter 5, we found a potential harmful association between moderate-to-vigorous intensity physical activity and cerebral microbleeds. A possible explanation for this finding is that physical activity can raise blood pressure, and acute bouts of exercise can give a blood pressure peak.³ Biologically, it would be possible that such a blood pressure peak would give a cerebral microbleed. In our study, we did not find an interaction with hypertension or anticoagulant medication. Nevertheless, it could be reasoned that individuals with hypertension or anticoagulant medication would have a higher risk for cerebral microbleeds by moderate-to-vigorous intensity physical activity. However, further research is needed by longitudinal studies to provide conformation of the association and also to investigate risk factors for this association.

Conclusion

Despite the effect of physical activity on cerebral microbleeds, evidence suggests that it is still of importance to perform physical activity because of positive health effects. Therefore, it is important that medical professionals try to stimulate patients to achieve sufficient physical activity, especially patients with a higher risk of cardiovascular and brain diseases. This can be in different ways but with focus on the individual needs. This will hopefully reduce disease and healthcare costs in the future.

Does one size fit al?

I think that physical activity, especially, but not only in individuals with a high risk on cardiovascular and brain diseases, should be considered as a personalised medicine. If you want a sustainable behaviour change, considering personal circumstances is very important for adjustments in physical activity and sedentary behaviour. Likewise, type and way of coaching in the process of behaviour change is very important. I believe that every individual needs are different, which cannot be all put into one program. A trial with different physical activity programs with different types/intensity of coaching would give a lot of information. It would indicate which personal characteristics would fit by which physical activity program. So that the changes of success of the physical activity program are higher in the high risk individuals.

Primary and secondary prevention is important but difficult to achieve. So personalised prevention with more physical activity and reduction in sedentary time is important for the future.

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