

SESSION 7195 (SYMPOSIUM)

PHYSICAL ACTIVITY AND HEALTH: DOES THE PATTERN MATTER?

Chair: Annemarie Koster

Co-Chair: Sari Stenholm

Discussant: Paul Gardiner

It is well-known that physical activity is key in the prevention of many diseases and disability in old age. Much less is, however, known about the pattern of activity in relation to health. While there are differences in how people spread their activity and sedentary behavior over the day or over the week, we don't know which activity pattern of most beneficial for health. This symposium focuses on patterns of physical activity and sedentary behavior and health in five different studies with accelerometry data in Europe and the USA. Dr. Rosenberg will show how sedentary behavior patterns are associated with various health outcomes in the Adult Changes in Thought (ACT) study. Using data from The Maastricht Study, Dr. Vandercappellen will present how weekly activity patterns, in particular comparing regularly actives to weekend warriors, are associated with arterial stiffness. Dr. Shiroma will show how patterns of physical activity and sedentary behavior, taking the volume, intensity, and frequency of sessions into account, are associated with mortality in the Women's Health Study. Dr. Caserotti will present the association between physical activity fragmentation and physical function in the SITLESS Study. Dr. Stenholm will present data from the Finish Retirement and Aging Study, using latent class trajectory analyses to identify daily activity patterns and how these patterns are associated with health-related physical fitness. Taken together, this symposium will provide insight into different ways patterns of activity can be operationalized using accelerometer data and if the patterns of activity and sedentary behavior are associated with health.

PATTERNS OF SEDENTARY BEHAVIOR IN A COMMUNITY-BASED COHORT OF OLDER ADULTS

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Few epidemiologic studies have examined device-measured sitting patterns by demographics and health status. The Adult Changes in Thought (ACT) study is an on-going epidemiologic study of adults age ≥ 65 years. We conducted a sub-study that added a thigh-worn activPAL device and sleep logs for 7 days to the measurement protocol. A total of 997 had valid wear time (≥ 4 days with 10-20 hours of data per day) and covariate data. activPAL sedentary pattern measures included number of sitting bouts lasting 30 minutes or more and mean sitting bout duration. On average, participants (56% female, 57% > age 75, 89% non-Hispanic white) sat in bouts lasting 17 minutes (SD = 12) and had 5.9 (SD = 1.7) bouts of sitting lasting 30 minutes or more.

Participants who were older, were male, had obesity, had worse self-rated health, had depression, and had difficulty walking had longer sitting bouts and more prolonged bouts.

ASSOCIATION OF THE AMOUNT AND PATTERN OF PHYSICAL ACTIVITY WITH ARTERIAL STIFFNESS: THE MAASTRICHT STUDY

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We examined the associations of the amount and the pattern of higher intensity physical activity with arterial stiffness. Data from The Maastricht Study ($n=1699$; mean age: 60 ± 8 years, 49.4% women, 26.9% type 2 diabetes (T2DM)) were used. Arterial stiffness was assessed by carotid-to-femoral pulse wave velocity (cfPWV). The amount (hours/day) and pattern of higher intensity physical activity were assessed with the activPAL3®. Activity groups were: inactive (< 75 min/week), insufficiently active (75-150min/week), weekend warrior (> 150 min/week in ≤ 2 sessions), and regularly active (> 150 min/week in ≥ 3 sessions). After full adjustment, higher intensity physical activity was associated with lower cfPWV (amount: $-0.35[-0.65;-0.05]$, insufficiently active: $-0.33[-0.55;-0.11]$; weekend warrior: $-0.38[-0.64;-0.12]$ and regularly active: $-0.46[-0.71;-0.21]$ (reference: inactive)). These associations were stronger in those with T2DM. Participating in higher intensity physical activity was associated with lower cfPWV, regardless of the weekly pattern, and may be an important strategy to reduce CVD risk, particularly in T2DM.

EXAMINING THE WHEN AND HOW OF PHYSICAL ACTIVITY PATTERNS IN OLDER ADULTS: THE WOMEN'S HEALTH STUDY

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Using data from the Women's Health Study ($N = 17,708$, mean age = 72 years), we investigated the relative importance of physical activity volume, intensity, frequency of sessions, and session duration. We calculated the mortality hazard ratio for varying patterns and combinations of physical activity intensities and sedentary behavior. In separate analyses, we compared participants who engaged in activity regularly throughout the week to those who focused on one or two days a week, and the relative importance of session frequency and duration. These characteristics of activity patterns and their impact on health may help design interventions and public policy.

THE IMPACT OF FRAGMENTED PHYSICAL ACTIVITY ON PHYSICAL FUNCTION IN EUROPEAN OLDER ADULTS IN THE SITLESS STUDY

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