Substituting sedentary time with physical activity domains: An isotemporal substitution analysis in Chile

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Introduction: Sedentary behavior (SB), physical inactivity and obesity are main risk factors for non-communicable diseases. However, it is unknow whether reallocating SB time with physical activity (PA) domains related to travel, occupational and leisure activities is associated with lower levels of adiposity. The aim of this study, therefore, was to examine independent associations and theoretical reallocations of SB and physical activity (PA) domains with obesity indicators in a nationally representative sample from Chile. Methods: Randomly selected participants were enrolled in the 2009?2010 Chilean National Health Survey. Cross-sectional self-reported SB and PA domains were collected using the Global PA Questionnaire. Isotemporal substitution modeling was applied to examine the potential effects of reallocating 10 min/day of SB with occupational or travel or LTPA in relation to Body Mass Index (BMI) and Waist Circumference (WC). Results: 3552 participants aged between 15 and 65 years [mean (standard deviation); age = 40.2 (14.07) years, BMI = 27.7 (5.38) kg/m2, WC = 91.2 (24.09) cm] reported an overall sitting time of 196.3 min/day and spent 15.4 min/day in LTPA. LTPA was negatively associated to both BMI and WC independently of SB. Substituting 10 min/day of SB with an equal amount of travel PA resulted in

lower BMI (B = ?0.033 95% CI: -0.055; -0.011) and WC (B = ?0.089 95% CI: -0.172; -0.007) independent of sociodemographic variables and sleep time. Notably, the strongest association with obesity indicators was observed when SB time was reallocated for LTPA (BMI B = ?0.080 95% CI: -0.122; -0.037) and WC: (B = ?0.373 95% CI: -0.500; -0.245). Conclusion: Replacing SB not only with LTPA but also travel PA appears to be favorably associated with lower levels of obesity indicators. Walking and cycling as part of our travel PA may be a more feasible way of increasing PA levels than moderate or vigorous intensities PA in the overall population, at lower costs and environmentally friendly.