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| **Gender inequality in the development of out-of-school exercise: A latent class repeated measures analysis across thirteen years.** |
| **Background/Objectives**  Out-of-school exercise (OSE) refers to regular voluntary exercise behaviour during leisure time for school aged population. Rather than general physical activity, OSE is usually deliberately initiated and represents an efficient target for interventions. However, relative few studies have investigated the gender differences of OSE development from childhood to emerging adulthood. This study aimed to examine latent trajectories of OSE from childhood to emerging adulthood across gender, and to identify gender differences in the individual and parental factors of OSE trajectories.  **Methods**  There were 2,072 4th graders (aged 10) in northern Taiwan followed annually from 2000 to 2013. OSE was measured by asking participants “Not counting school physical education classes, have you exercised in the past week?” annually. Covariates included Individual factors (i.e. Body Mass Index, body dissatisfaction, stress, and screen behaviour) and parental factors i.e. (parental education level, family monthly income, parental marriage status, parental exercise and parental screen behaviour). Repeated-measures latent class analysis was used to identify trajectories. Multinomial logistic regression was used to identify related factors.  **Results**  Males had a larger proportion (27%) to be classified as “continuing high level of OSE” than females (10%). In contrast, 34% and 33% females were categorized into “chronically low level group” and “decreasing group” respectively, while only 20% and 21% males were categorized into the two groups respectively. About one third of males (32%) were divided as “moderate group” and only a quarter of females (23%) were assigned as “moderate group”. Females abandoned regular OSE earlier than males. Parental exercise, parental education level and individual stress level were associated with male’s OSE trajectories, but not related to female’s OSE trajectories. BMI and family income were associated with female’s OSE trajectories, but not associated with male’s OSE trajectories. Body dissatisfaction and individual screen behaviour were associated with OSE trajectories of both genders.  **Discussion**  Exercise patterns changed from childhood to emerging adulthood in both gender. Gender specific predictors were identified. Interventions may need to be tailored by gender and girls may benefit from interventions at younger ages.  **Keywords**  Out-of-school exercise, trajectories, childhood, adolescence, emerging adulthood, gender differences |