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# Various age category – related differences in the volume and intensity of the large-scale cyclic movements of male players in team handball

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## Abstract

The aim of this study was to identify differences in the volume and intensity of large-scale cyclic movement activities performed by handball players of three age categories - cadet men (aged between 15 and 17 years), junior men (aged between 17 and 20 years) and senior men (aged 20 years or over). For this purpose six experimental model matches  $(2 \times 20 \text{ min})$ , played by the Slovenian male handball teams, were analyzed. The sample consisted of 84 players of twelve teams (average age 20.26  $\pm$  4.28 yrs; average height 182.51  $\pm$  6.59 cm; average body mass 80.61  $\pm$  10.37 kg) and was divided into three sub-samples by age (cadet men, junior men and senior men). The collection of large-scale cyclic movement data in a handball match was based on the computer-aided automatic tracking method SAGIT (Ljubljana, Slovenia) based on computer vision. The data output on large-scale cyclic movements obtained by the SAGIT program were processed by selected descriptive statistical methods. There were statistically significant differences between different age categories in terms of the volume of the total distances walked and run during the matches. The greatest distance was achieved by senior men, followed by junior men and cadet men. In all analyzed age categories the volume of total distances was greater in the first than in the second half of the match. Statistically significant differences also appeared in the average share of time recorded in all speed classes (SC - speed class), except for the second one (2nd SC). In the 1st SC some statistically significant differences were seen between cadet men and senior men as well as between cadet men and junior men, while there were none between junior men and senior men. In the 3rd SC statistically significance differences appeared between all of the analyzed age categories. Similarly to the 1st SC there were statistically significant differences between cadet men and senior men as well as cadet men and junior men in the 4th SC, while no differences were seen between senior men and junior men. In view of the different age categories of handball players, we expected some differences in the analyzed variables, as the athletes belonging to older categories are biologically more mature and are subjected to functional training for a longer time. That reason enables them to perform more large-scale cyclic activities during a match and spend a higher percentage of time in higher speed classes.

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