

## Summary

The aim of this research was to increase the amount of information provided by the FMS functional assessment test by proposing and evaluating a diagnostic indicator (functional performance indicator for FMS) on a linear range scale by creating a precise diagnostic "tool" to detect even small changes in the level of motor functions.

The study was attended by 30 men, and each of the subjects performed each FMS test thrice. The participants had 39 markers glued for the measurements made by the optoelectronic Vicon system and video cameras. Simultaneously with the recording of movement, the evaluation of FMS tests was performed by a licensed expert, assigning points for each repetition. The aim of this research was to increase the amount of information provided by the FMS test and to create indicators expressed in a linear order scale, which increases diagnostic accuracy. For the obtained industrial data in c3d format, MATLAB scripts were created for analysis according to FMS protocol guidelines. Based on the time profiles of the kinematic parameters and evaluation criteria of the FMS test samples, variables that evaluate the level of sample execution have been created. Then, the values of the analyzed EMP variables were reduced by using a two-sided Grubbs test. Next, the number of variable evaluation criteria was reduced, describing the way the exercise was performed.

The proposed "SFb" indicator was created from the average value of obtained results, which constituted a module of the number of each motion criterion. The "FA" indicator was presented as an SI module - Symmetry Index of each time course of kinematic parameters in all motion patterns, and then the average of these values was calculated. The results presented by the indicators are the percentage of error in a movement criterion. The reliability of the indicators was verified and their value compared in groups obtaining different point values from an FMS expert. Statistically significant differences between the groups were attempted to determine the cut-off point.

Capturing small motor deficits may lead to a better understanding of changes in the motor system. In the future, such information may constitute a valuable source of knowledge about the athlete's motor condition, while being used during the training process. The results have the potential for further consideration along with extending the group and verifying the results in the future.