

Abstract

This diploma thesis aimed to evaluate the level of upper limb strength asymmetry between the dominant and non-dominant side and trunk rotation strength in young soccer players, then to compare this relationship with respect to strength performance. The research population consisted of 18 young players in the U16 age group who play soccer at an elite level. Players participated in isometric upper extremity and trunk strength testing. Data collection of isometric upper limb grip strength (Handgrip) parameters was performed using a digital handheld dynamometer (Takei, A5401, Japan). A Humac Norm Cybex isokinetic dynamometer (CSMi, Humac Norm, USA) in isometric mode was used to test trunk strength in rotation. The results of the trunk rotation force values in favor of the dominant side averaged 19.83 ± 3.47 kg. For the non-dominant side, players achieved average results of 19.17 ± 3.33 kg. The T-test results showed that the dominant side of the body achieved significantly higher results in absolute trunk rotation strength with a value of $p = 0.035$, also in relative strength with a value of $p = 0.032$. In the Handgrip, the average result value on the dominant side was found to be 41.76 ± 8.63 kg. The non-dominant side achieved a mean grip strength value of 39.68 ± 5.79 kg. The results of the T-test showed that the body's dominant side achieved a significantly higher result in relative Handgrip strength with a p-value of $p = 0.049$, but a non-significant difference in absolute strength with a p-value of $p = 0.059$. Based on the Pearson's correlation coefficient value of 0.71, we can describe the value between the absolute force of trunk rotation and Handgrip as a strong positive relationship. By regularly testing the bilateral asymmetry of different strength parameters, we can aim at early detection of its elevated level ($>10\%$), which may arise as a result of the movement stereotype of the sport. We may positively influence the degree of strength asymmetry through optimally selected compensatory exercises and thus reduce the risk of potential injury. The data collected on bilateral upper limb and trunk asymmetries and their interrelationship may be used by coaches and other researchers to constitute positive impact on player performance.

Key words: sports games, isometric strength, laboratory testing, youth–category U16, professional sport