

ORIGINAL RESEARCH

STRENGTH & FUNCTIONAL ASSESSMENT OF HEALTHY HIGH SCHOOL FOOTBALL PLAYERS: ANALYSIS OF SKILLED AND NON-SKILLED POSITIONS

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ABSTRACT

Background/Purpose: Identifying an athlete's functional capacity is an important consideration in determining when to allow an athlete to return to competition following injury. Establishing normative data for lower extremity functional assessment is valuable for comparison when making decisions regarding the high school athlete returning to play after injury. Therefore, the purpose of this study was to compare functional performance and strength between American high school football players of both skilled and non-skilled positions.

Methods: Forty-nine high school football players (30 skilled; 19 non-skilled) completed a single-session of testing consisting of a Figure of 8 test (F-8), single-leg vertical jump (SLVJ), single-leg broad jump (SLBJ), and isokinetic knee strength assessment. Pearson correlation coefficients were used to determine the relationships between the results of functional testing and isokinetic strength measures. Paired t-tests were used to determine the differences in functional performance and isokinetic muscle strength between skilled and non-skilled athletes.

Results: Knee extension peak torque/body weight (BW) was moderately correlated ($p < .01$) with SLBJ ($r = .54-.61$), SLVJ ($r = .39-.48$), and F-8 run times ($r = -.50$) for all athletes. Similar relationships were observed between knee flexion peak torque/BW and SLBJ ($r = .48-.49$), SLVJ ($r = .28-.46$), and the F-8 run times ($r = .41-.52$) for all subjects. No differences were observed between groups when examining raw peak torque values for knee flexion and extension ($p > .05$), however, skilled players did demonstrate greater peak torque/BW ratios ($p < .05$) for both knee extension and knee flexion at 60 and 240 degrees/sec. Skilled players also displayed faster F-8 times (9.4 sec \pm .3; $p < .01$) and greater SLBJ ($p < .05$) on both the dominant (81.0 in \pm 9.3) and non-dominant (83.0 in \pm 7.6) limbs ($p < .01$) when compared to non-skilled players.

Conclusions: Overall, skilled football players displayed greater peak torque/BW ratios and functional performance when compared to non-skilled players. Furthermore, isokinetic peak torque/BW appears to be related to functional performance. This relationship is affected by position, with skilled players showing a stronger association. Limb dominance did not influence these functional and strength metrics. It is recommended that clinicians and coaches consider the positional differences in strength and functional performance when managing patients and athletes.

Keywords: Football, functional assessment, isokinetic strength assessment

Level of Evidence: 4 – Cross-sectional Case Series

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