Strength and Mobility Measures in Division I Female Volleyball Student Athletes Across Different Positions

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ABSTRACT

Shoulder internal and external rotation and hand grip measures are commonly used to evaluate upper extremity mobility and strength in college athletes. However, positional differences and their impact on these scores are rarely considered, therefore further research is needed in sports such as volleyball where information on these potential trends is lacking. **PURPOSE**: The purpose of this study was to identify possible differences between strength and mobility measures in female volleyball student-athletes whose responsibilities include hitting (predominantly overhead roles) versus those who are primarily passers and diggers (non-overhead roles). **METHODS**: Thirteen Division I volleyball student-athletes who volunteered to participate in this study were divided into two groups - hitters (H; age = 19.6 ± 1.5 y, height = 180.7 ± 6.7 cm) and passers (P; age = 19.3 ± 1.2 y, height = 172.0 ± 10.0 cm). Players were tested on their shoulder range of motion (ROM) for internal rotation (IR), external rotation (ER), and flexion using a goniometer. Total ROM was identified as a sum of IR and ER. Hand grip strength was measured in the dominant hand using a hand grip dynamometer. All testing was completed by certified healthcare professionals prior to preseason following clearance by the team physician. Descriptive statistics were calculated as mean ± standard deviations. **RESULTS**: H had higher total ROM than P in both the right arm ($158.6 \pm 65.8°$ vs $144.1 \pm 65.8°$) and left arm ($165.0 \pm 67.8°$ vs $155.7 \pm 69.7°$). H had higher flexion than P in the right, dominant arm ($176.9 \pm 7.9°$ vs $171.5 \pm 18.7°$), but similar flexion in the left, nondominant arm ($180.1 \pm 5.6°$ vs $180.7 \pm 3.4°$). H and P both had higher than average values for shoulder ROM compared to published normative data. Hand grip strength was also higher in H compared to P (31.6 ± 6.2 kg vs 26.1 ± 2.5 kg). **CONCLUSION**: H displayed greater total ROM in both arms, a higher flexion ROM in their dominant arm than P as well as greater strength in their dominant arm. This emphasizes the importance of mobility and strength in their positional demands, and the need for shoulder stability. This information provides strength and conditioning coaches preliminary information on possible foci for training and areas where further research is still needed.