ELECTROMYOGRAPHIC ASSESSMENT OF PROFESSIONAL GOALKEEPERS EXPERIENCING SHOULDER PAIN DURING A FUNCTIONAL ACTIVITY

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Background and Aims

This study aimed to assess and compare the electromyographic activity of specific shoulder girdle muscles in professional goalkeepers, both with and without shoulder pain.

Methods

Ten professional goalkeepers participated in the study, five experiencing shoulder pain (mean age: 19.60 ± 3.20 years, body mass: 74.50 ± 2.85 kg, height: 17.80 ± 5.39 cm) and five without pain (mean age: 19.11 ± 1.65 years, body weight: 73.50 ± 6.10 kg, height: 178.50 ± 5.10 cm). Surface electromyography signals were recorded from seven upper limb muscles while participants performed a task, marking points with a pen in a counterclockwise motion within three circles. The normalized root-mean-square value was used to assess muscular activation.

Results

Goalkeepers experiencing shoulder pain exhibited increased activation in the upper trapezius (pain group mean: 27.90 ± 10.50, control group mean: 13.30 ± 6.10; $p = 0.002$, $\eta^2 p = 0.450$), serratus anterior (pain group mean: 30.50 ± 19.80, control group mean: 13.20 ± 5.60; $p = 0.025$, $\eta^2 p = 0.280$), and latissimus dorsi (pain group mean: 26.90 ± 17.80, control group mean: 4.85 ± 3.95; $p = 0.002$, $\eta^2 p = 0.448$) muscles. However, no significant differences ($p > 0.05$) were observed in the activation of the middle and lower trapezius, middle deltoid, and sternocleidomastoid

Conclusion

Modified muscle activation patterns may play a role in shoulder pain among professional goalkeepers and should be taken into account in rehabilitation strategies.

Keywords: EMG; goalkeepers; shoulder pain