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Effect of Strength and Conditioning on Skill-Related Fitness in Archery: A Systematic Review

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I. INTRODUCTION

Precision sports such as archery require integrated neuromuscular control, postural stability, and psychological regulation to sustain consistent shooting performance. This review synthesises evidence on how structured strength and conditioning (S&C) interventions affect skill-related fitness components, including power, balance, coordination, reaction time, and muscular endurance, and whether these changes transfer to shooting accuracy, endurance, and injury prevention.

II. METHODS

This systematic literature review followed PRISMA principles. Databases were searched for studies published between 2008 and 2023 that addressed S&C interventions in archery. Duplicates and irrelevant records were removed, and full texts were screened by two reviewers with third-party adjudication. The final evidence base comprised controlled interventions and observational studies that met predefined PICOS criteria. Intervention characteristics, including modality, duration, and frequency, were extracted alongside outcome measures such as shooting scores, draw stability, balance, grip strength, and reaction time. Methodological quality was assessed, and narrative synthesis emphasized transferability to on-range performance.

III. RESULTS AND DISCUSSION

The included studies were generally small and short term but consistently showed directional benefits from structured S&C. Combined programmes, involving general resistance training and sport-specific drills, produced larger and more

transferable gains than isolated modalities. Scapular and shoulder stabilization interventions improved dynamic shoulder control and reduced micro-instability during the draw and hold phases, correlating with tighter shot groupings. Core stability and balance work reduced postural sway and supported steadier aim under fatigue, although direct transfer to competition scores varied across studies. Coaches should individualise load, monitor fatigue, and embed conditioning without disrupting finely tuned motor patterns.

IV. CONCLUSIONS

Well-structured S&C regimens, particularly those combining general resistance work with archery-specific drills, improve muscular endurance, postural stability, and several markers linked to shooting accuracy. However, larger, longer, and ecologically valid trials are needed to produce definitive, population-specific guidelines and confirm long-term injury-prevention effects.

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