

# Should All Athletes Do Explosive Lifting?

A Commentary

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## INTRODUCTION

The article by Newton and Jenkins poses several important questions relating to strength training and weightlifting. The question of whether strength and power training “optimises sporting results” has received considerable attention, particularly in recent years.

## STRENGTH AND POWER AND SPORTS PERFORMANCE

While some muscular strength and power qualities discriminate higher- and lesser-skilled athletes [1], others do not [2, 3]. Indeed, in a study of American football players, a wide range of muscular strength and power qualities (1-repetition maximum squat, bench press, power clean, and snatch) were measured [3]. The strongest predictor of playing ability was vertical jump performance, with strength and power measures (bench press and power clean) only moderately associated ( $r = -0.48$  to  $-0.58$ ) with playing ability, and only in defensive players.

A large number of studies have examined the relationship between muscular strength and power qualities and performance (e.g., sprinting speed, jumping ability, and tackling proficiency) [4-6]. In general, greater muscular strength and power is associated with greater performance [4-6]. However, studies demonstrating transfer effects of strength and power training to the competitive environment are less conclusive, with improvements in strength and power often observed without concurrent changes in sport-specific skills [7]. While there is sufficient evidence to support the use of strength and power training as an important component of athletic preparation, clearly further research is required in order to determine if improvements in physical qualities that are developed through strength training, transfer to the performance of sporting skills.

## STRENGTH AND POWER TRAINING AND INJURY RISK

An equally important question raised by Newton and Jenkins' article, is the degree to which strength training offers a protective effect against injury. The authors correctly assert that some coaches circumvent strength training in their programs, due to an (often) unsubstantiated fear of injuring their athletes. Others avoid strength training as the fatigue and soreness that manifest in the days following training prevents athletes from performing other important “sport-specific” training (e.g., quality swimming sets). Although the decision to use strength and power training to improve athletic performance is often heavily influenced by tradition and the culture of the sport, empirical evidence demonstrating a

protective role of strength training against injury is equivocal, with studies showing increased [8], decreased [9], and unchanged [10] injury risk in the strength-trained state.

McGill et al. [10] examined the relationship between measures of strength and injury in university-level basketball players. No relationship was observed between measures of muscular strength and injury incidence. It should be recognised, however, that the degree to which high levels of muscular strength and power prevent injuries is likely dependent on the sport in question. We recently investigated the risk factors for collision injuries in professional rugby league players [9]. Players with poorly developed upper-body strength (chin-up) and power (bench throw) were at increased risk of collision injury. These findings are in contrast to the results of others [8] that have shown a significant relationship ( $r = 0.82$ ) between strength and power training loads and non-contact field training injuries. Collectively, these findings suggest that high strength and power training loads may contribute indirectly to field injuries, but the development of muscular strength and power that occurs through this type of training is likely to prevent more commonly occurring collision injuries.

## CONCLUSION

Clearly, the use of strength and power training for athletic performance depends on the physical requirements of the sport, and also balancing the potential benefits of resistance training with the negative consequences which may arise. While the evidence supporting a protective effect of strength and power training against injury is far from conclusive, there is sufficient evidence to suggest that appropriately periodised strength and power training can improve athletic performance [7, 11].

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