

# THE IMPORTANCE OF STRENGTH TRAINING IN FOOTBALL AND INJURY PREVENTION

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## INTRODUCTION

*Football is one of the most games in the world with millions of adults and children playing at different levels. Football is a high-impact sport that requires a combination of strength, agility, and endurance to perform in highest level. However, with these physical requirements comes the risk of injury, and one of the biggest issues is the lack of awareness of the significance of strength training in the sport to prevent injuries. Injuries do not only affect the player's performance in the game but can also have long-term effects on their overall physical and mental health.*

*This report will review some of the latest research on strength training for football players and its impact on injury prevention. strength training has proven to increase joint stability and muscle strength, and to reduce the risk of injury among football players. However, other research has raised concerns regarding over-training injuries. In this report, we will review recent research examining protocols and training loads that appear to be important for the prevention of injuries. Overall, this report aims to give an understanding of the role of strength training in promoting a safer football practice for both professional and amateur participants.*

*Colby et al. (2014) investigated the connection between overall training load and the risk of injury (mainly self-non-contact injuries) in elite Australian football players. The participants were 46 elite Australian football players, and the training load data was collected with a GPS accelerometer on every training session and game, in both the preseason and in-season periods. The club senior physiotherapist was responsible for diagnosing the injuries and defining them as being either minor, moderate, or severe. The researchers compared the total training loads and the changes in training loads, in retrospect, between injured and uninjured*

players at the end of the season. The training load was greater during the preseason phase during which emphasis is on fitness improvements and skill development, in comparison to the playing season, during which there were weekly games and more injuries. During preseason, there were more injuries in those athletes who trained a 3-weekly distance of between 73 and 86 km compared to athletes who trained distances of less than 73 km. Similarly, athletes with a 3-weekly sprint distance of 864–1,453m had a lower risk of injury compared to athletes with 3-weekly sprint distances of more than 1,453m or less than 864 m. During the in-season, a 3-weekly force load of more than 5,397 AU was correlated with a greater injury risk when compared with less than 4,651 AU. The researchers concluded that both excessive and insufficient training loads may increase intrinsic injury risk, and a specific intermediate level of load appears to be protective against injury.

While the above study was retrospective and did not examine a specific training protocol, Silvers-Granelli et al. (2017) conducted a prospective study which examined if the FIFA 11+ injury prevention program could reduce the overall number of anterior cruciate ligament (ACL) injuries in men who play competitive college soccer. They also considered whether the reduction in the rate of ACL injuries differed based on Game vs Practice; position of the player; Level of play (Division 1 or 2) or field type (grass or artificial turf). The participants were players aged 18 - 25, medically cleared and playing in Division 1 and Division 2 of the National Collegiate Athletic Association (NCAA) men's soccer teams in the fall 2012 season. The intervention group did the FIFA 11+ protocol (15- to the 20-minute dynamic warm-up program used before games and training) performed two to three times a week throughout the entire season. A secure internet-based injury surveillance system was used for both groups to note all training sessions and games, injuries that occurred (including ACL injury), how they happened and how long it took for them to return to the sport. The players used the FIFA 11+ protocol 2.19 times per week on average. The research found that the program decreased the

*overall rate of ACL injury by 77% in competitive male soccer players. They found no difference in games versus practices, or between player positions, and a decreased overall risk of ACL injury, contact and noncontact ACL injury in men in the intervention group.*

*One of the most important exercises in the FIFA 11+ protocol is the Nordic Hamstring exercise which was investigated by Petersen et al. (2011). He investigated the effect of the Nordic hamstring exercise used for the eccentric strengthening of the hamstrings, to prevent the rate of hamstring injuries in male soccer players. The participants were 942 players from 50 Danish male professional and amateur soccer teams, including an intervention group of 461 players and a control group of 481 players. The Intervention group performed a 10-week progressive eccentric training program followed by a weekly seasonal program and players in the control group performed their usual training program. The team's physiotherapist and medical staff were instructed about injury definition and collected data on all hamstring injuries. The main result measures were the numbers of new and recurrent acute hamstring injuries during one full soccer season. The research found 52 acute hamstring injuries in the control group vs. 15 injuries in the intervention group. Per 100 player seasons, there were 3.8 injuries in the intervention group compared to 13.1 in the control group, new injury rates per 100 player seasons were 3.1 in the intervention group vs 8.1 in the control group and recurrent injury rates per 100 player seasons - 7.1 intervention group vs 45.8 in the control group. They concluded that in male professional and amateur soccer players, additional eccentric hamstring exercise decreased the rate of overall, new, and recurrent acute hamstring injuries.*

*Gomez et al. (2022) reviewed previous research which examined the value of injury prevention programs for adult male footballers. Their purpose was to make recommendations for strategies for injury prevention for footballers. Gomez et al. (2022) research found that 31% of all injuries in male football players were muscle injuries, the highest rate (37%) were hamstrings injuries, followed by the adductors (23%), quadriceps (19%), and the calves (13%).*

*That explains why most of the research on muscle injuries in football has been focused on the hamstring muscles. There are a few risk factors for hamstring injuries which include age, body mass, core stability, delayed recovery, muscle fatigue, muscle flexibility, muscle activity, playing position, previous hamstring injury, thigh muscle imbalance, and hamstring muscle weakness. Strength training exercise programs used to prevent hamstring injuries should consider hamstring muscle weakness or imbalance with quadriceps strength. The research found that injury prevention programs in football have focused on strength training (core stability, functional strength, proprioceptive training, multicomponent programs), mobility and warm-up. They concluded that the rate of match and training injuries in football players can be lowered by dynamic warm-up programs that include preventive exercises before games or during training sessions by adding strength, balance, and mobility training to the training sessions. However, in their review, the researchers only included studies that showed a reduction in the number of injuries as a consequence of a physical exercise intervention program.*

*Gabbett (2016) reviewed research which examined the possibility that over-training could lead to increased injury risk, reduced fitness, and poor team performance. His paper presented the training-injury prevention paradox in that while physically hard (and appropriate) training loads are usually related to improved fitness, and better performance and have been shown to protect against injuries, there is also a connection between high training loads and injury.*

*Gabbett (2016) described the different approaches in which training loads can be measured for research and practice purposes, including external training load through using Global positioning systems (GPS). The internal training load refers to the player's perception of effort by his/her 1–10 'rating' on the intensity of the session. Research addressing training load has also monitored individual athlete well-being through subjective questionnaires which inquire about the athlete's perception of pain in different limb muscles and their level of stress, energy, diet, and sleep. Gabbett (2016) reviewed previous research which examined the relationship*

*between training loads and injury and showed that the problem is not with training in general, but more likely the inappropriate training that is being recommended. Excessive and rapid increases in training loads probably cause many of the non-contact, soft-tissue injuries. However, appropriate, and physically tough training leads to physical condition and capability development, which reduces the risk of injuries. This paper emphasises the importance of careful monitoring of training load, as an approach to reduce sports injuries.*

*In summary, we can see that strength training can lower the risk of injuries among football players. However, the program should be customised to the athlete with attention to the athlete's routine, lifestyle and physical loads and should relate to his training within his team environment and extra personal strength or specific (Football-Focused) training. As we can see in the latest research, to prevent overuse training injuries, the program should suit the fitness level of the athlete and should be performed with great attention to the details.*

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