The Effectiveness of Injury Prevention Programs Applied to Youth Soccer

Every coach would like to ensure that his/her players are learning, excelling, and enjoying their time playing soccer. That's why many of us entered the coaching profession to begin with. However, when a player becomes injured, there can be many devastating effects that arise for the injured player as well as for the morale of the team. Because of these effects, researchers have been continually trying to find ways to lessen the incidence of injuries in youth soccer players.

And, guess what? Injury prevention programs work incredibly well.

Categories of Injury Prevention Programs

- Neuromuscular/Proprioceptive- *training the body* (warm-up routines consisting of dynamic stretching, specified strength and agility exercises, balance training, etc.)
- Psychosocial- *training the mind* (relaxation, visualization, stress management, goal setting, enhancing self-confidence, etc.)

How well do these programs work? Recent studies estimate that a team can reduce their rate of injuries by as much as 88%!

Since these injury prevention programs have been found to be so effective at keeping youth soccer players on the pitch, the following recommendations should be explored for implementation in your soccer program:

Recommendations Regarding Injury Prevention Programs

- Implement neuromuscular injury prevention programs at an early age (beginning around age 10 and definitely by age 13).
- Even more strongly encourage implementing neuromuscular injury prevention programs for female youth teams (due to higher injury rate for female players).
- Implement psychosocial injury prevention programs beginning with the teenage years.

Remember that, as a coach, you are responsible for those in your charge. If you are not keeping aware of today's advancements in injury prevention, you are putting your players at risk for potentially serious injuries.

For more in-depth information on example programs and the studies reviewed for this paper, see below.

Literature Review

A review of the literature on the subject of injury prevention programs utilized in youth soccer reveals many different approaches to researching the subject. Important factors in this literature review which differed among studies included the type of program, the skill levels of the players, and the type of injuries which were targeted for reduction. These variations should be taken into account when investigating the possible application of these injury prevention programs, in whole or in part, to any soccer team.

As noted above, there are two main types of injury prevention programs, neuromuscular/proprioceptive and psychosocial. Neuromuscular/proprioceptive injury prevention programs were the vast majority of programs found.

Mandelbaum et al. (2005) studied female club soccer players aged 14-18 years who were participating in a Los Angeles area travel league. The timeframe was two years and utilized the Prevent Injury and Enhance Performance Program video series to study the programs effect on ACL injury rates. Coaches received the videos and accompanying literature and attended an in-person demonstration session in order to properly implement the program for their team. The program consisted of a sequence of stretching, strength exercises, plyometrics and agility drills as a replacement for the coach's regular warmup. The results of the program were quite positive; 88% fewer ACL injuries for the test group compared to the control group during the first year of the study and 74% fewer ACL injuries the second year.

Junge et al. (2002) also incorporated neuromuscular/proprioceptive measures into a program in addition to various other general safety measures (such as taping ankles, etc.). The study centered on male, 14-19 year old players of varying abilities (from recreational to traveling club teams) in two areas of Switzerland. The study spanned one year and was concerned with all lower extremity injuries. The program included warmup and cooldown measures and "F-MARC bricks," 10 exercises designed to enhance stability, flexibility, strength, coordination, reaction time and endurance. This program also had a positive effect: the overall number of injured players was 20% lower and the overall "rate of injury" was 36% lower for those who used the program. Another interesting and important takeaway from this study is that the program benefitted "low skill" teams much more so than "high skill" teams with low skill teams in the test group experiencing 54% fewer injuries than the control group. *This finding points to the idea that, while many coaches/technical directors might see recreational/developmental leagues*

as less likely to produce injury thus lessening or negating the need for such a program at that level, the opposite is true hence necessitating as much, if not more, need for such injury prevention programs at that competition level.

The study conducted by Emery and Meeuwisse (2010) concerned all lower extremity injuries over the course of one year for U13-U18 male and female recreational/ developmental players in an indoor soccer league in Calgary, Canada. The neuromuscular program was designed to be soccer specific and contained dynamic stretching, eccentric strength, agility, jumping, and balance exercises. In this program, part of the balance exercise portion was to be conducted on one's own time at home, rather than prior to practices/matches. A similar positive effect was noted with this program also with the study noting "there was a 38% reduction in all injury in the training group compared with the control group and a 43% reduction in acute-onset injury" (p. 559). *An important affirmation is also noted in this study; that those players with a previous injury are much more likely to incur another injury*. *Injury prevention programs such as those noted here could be a valuable tool in preventing injury reoccurrence in players*.

Pollard et al. (2006) studied the effect of a neuromuscular injury prevention program on the kinematics of the knees and hips versus rates of injury like the other studies reviewed. The study took place over the course of one season of Los Angeles area female club and high school competition for players aged 14-17 years old. The program used was the Prevent Injury and Enhance Performance Program video series, the same that was used in the study by Mandelbaum et al. (2005). While the study found no effect of the program on knee kinematics, *there was a positive effect on hip kinematics leading the researchers to theorize that such gains could help lessen the potential for forces to occur that might contribute to ACL injuries*.

Perhaps the most interesting study reviewed was conducted by Johnson et al. (2005). This injury prevention program was psychosocial in nature, with no additional or different exercise philosophy, versus the neuromuscular programs reviewed above. The subjects were approximately 18-24 year old semi-professional players, male and female, studied over the course of five months in Sweden. Potential subjects were picked if they were found to be "at risk" as determined by multiple tests. These at risk individuals attended various therapy sessions with focus on somatic and cognitive relaxation, stress management skills, goal setting skills, attribution and self-confidence training, and discussion of critical life incidents (both related and unrelated to soccer). The control group averaged 1.31 injuries per person while the test group

averaged only .22 injuries per person. *This supports long held beliefs that injury is more likely to occur when players are distracted by off the field issues and that enhancing one's ability to handle such issues can be beneficial to preventing injury*.

Potential Issues to Interpreting Research

A few issues that coaches/technical directors should be aware of with the review of research on this subject (both in this paper and in additional resources):

- *Injury Definition*: different studies sometimes accounted for injuries differently. Some simply measured the number of injuries which occurred. Others took into account the amount of time a player lost due to injury. Some counted the need to modify a training session as evidence of injury while some only counted injuries which completely prevented participation in a training session.
- *Exclusion of Subjects*: some studies excluded subjects with a history of prior injury. The length of time since prior injury that must have passed to be able to participate in a study varied as well. This means some program's effectiveness on such players is unknown.

Conclusions

Each of the studies noted above showed a positive effect on injury prevention. With regards to neuromuscular programs, the implications of repeated and/or serious lower extremity injuries on one's ability to engage in physical activity are vital to ensuring the future health of players. Players who incur such injuries may be in danger of being unable to engage in regular physical activity, putting their long term health in jeopardy. As Emery and Meeuwisse (2010), among others, notes, *the U13-U18 age group has been shown to have the highest incidence of lower extremity injury (p. 556) and females have been shown to have a higher rate of lower extremity joint injuries than males (p. 555).* Therefore injury prevention programs should be instituted to counter these trends. With regards to psychosocial programs, the factors which identified somebody as "at risk" in Johnson et al. (2005) are common issues for today's teenagers. Likewise, the programs initiatives are useful skills for people to have inside, and outside, of sport. While therapy sessions are likely too much to ask, the role of the coach as mentor means that a coach can likely successfully implement most portions of such a program if he/she is willing to set aside a portion of practice and/or free time to do so. By implementing programs such as these, coaches can help ensure their player's health remains intact and their teams keep moving in a positive direction.

References

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