

Dry Needling and Hamstring Strains in Collegiate Baseball Players



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Operational Definitions

- **Hamstring Strain Injury** - damage to the muscle fibers of the hamstring muscle group usually as a result of fatigue, overuse, or overstretching (Brockett, Morgan, & Proske, 2004).
- **Dry Needling** - invasive therapeutic treatment method that involves the insertion of acupuncture needles deep into damaged muscle tissue (Dembowski, Westrick, Zylstra, & Johnson, 2013).
- **Eccentric Strength Training** - loading of a muscle as it elongates or undergoes an eccentric contraction to increase strength (Ramos et al., 2017).
- **L-Protocol** - eccentric strength training program consisting of three exercises that are specifically designed to rehabilitate HSIs (Asking, Tengvar, & Thorstensson, 2013).
- **H-Test** - a ballistic test designed to indicate whether an athlete is ready to return to sport after suffering an HSI (Asking et al., 2013).

Abstract

Hamstring strain injuries (HSIs) are extremely prevalent injuries in the collegiate baseball setting. HSIs require plentiful rest and rehabilitation to regain the normal functions of the injured leg meaning athletes will not be able to participate in competition. Time loss from sport has negative effects on the injured athlete and their team. For these reasons, it is important that athletes receive the best possible treatment to get them back on the field as quickly and safely as possible. Eccentric strength training has been shown to be the most effective rehabilitation and injury prevention measure for HSIs. Eccentric training is often accompanied by many other treatment interventions such as soft tissue work, electric muscle stimulation, and many others. One treatment intervention that is relatively new in the clinical setting is trigger point dry needling (DN). DN has been shown to be effective at reducing pain and enhancing flexibility, but research as to whether or not it can speed the recovery of athletes with HSIs is lacking. There is also no research involving DN and baseball players. The purpose of this study is to explore the potential relationship between DN techniques and the return to play time in baseball players with acute grade I HSIs. This will be accomplished through the comparison of return to play time (DV) in a group of baseball players who receive dry needle interventions supplemented with their eccentric training protocol versus baseball players going through eccentric training alone (IV). It is hypothesized that the group of participants who receive DN will have significantly shorter return to play times.

Introduction

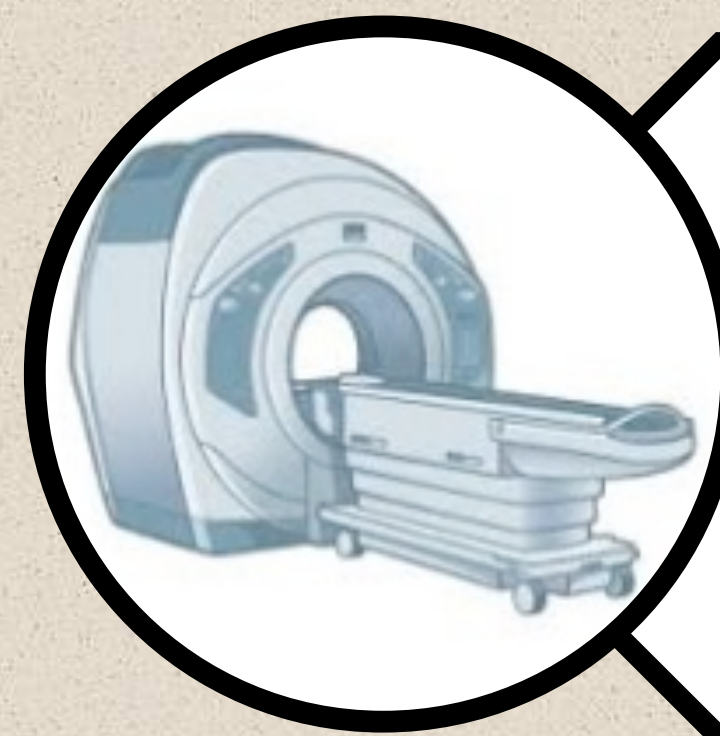
- HSIs are the most common injuries among collegiate baseball players (Dick et al, 2007).
- Implementing DN into rehabilitation protocols has been shown to reduce pain in the hamstring muscle (Dembowski et al., 2013).
- There are various studies that show DN has therapeutic benefits, but no research has been done to see if there is a correlation between DN and faster return to play times in athletes. There are also no studies that involve DN and baseball players.
- A study involving DN and baseball players with hamstring strains needs to be completed to fill the gap in the literature.

Methodology



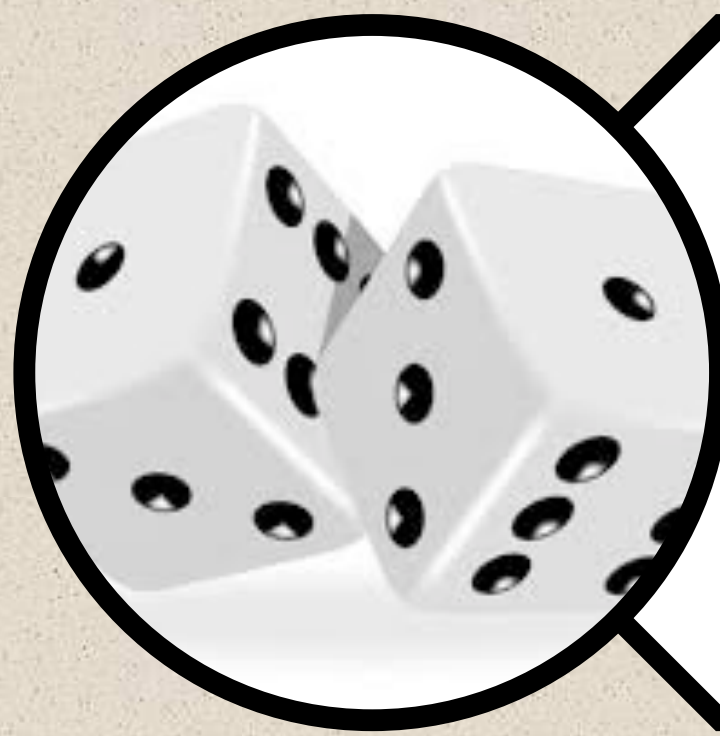
IRB Approval and Informed Consent

- IRB approval and informed consent for each patient was received prior to any tests or intervention.



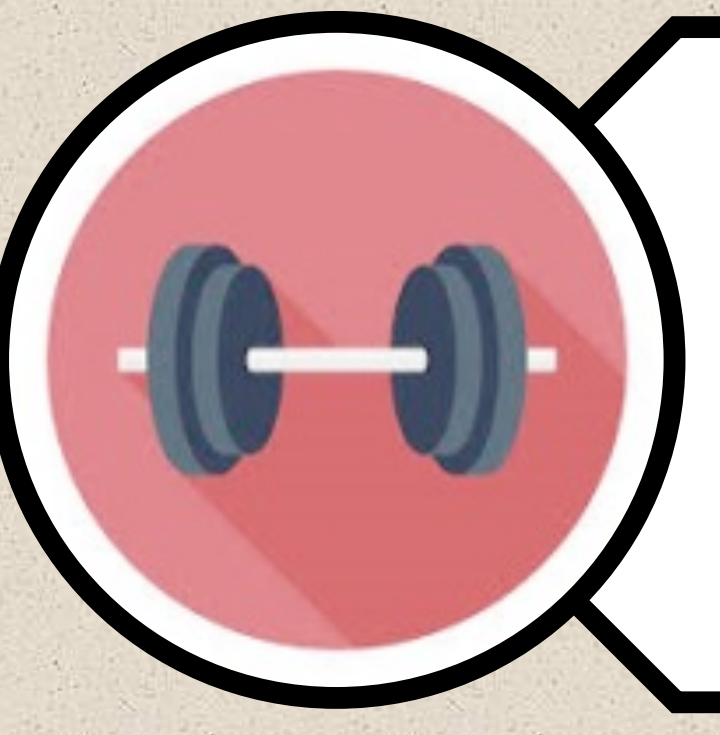
MRI Evaluation

- Once accepted into the study, each participant underwent an MRI to confirm the presence of an acute grade I hamstring strain.



Assignment

- Once presence of an acute grade I strain was confirmed, each participant was randomly assigned to one of two groups (DN and non-DN group).



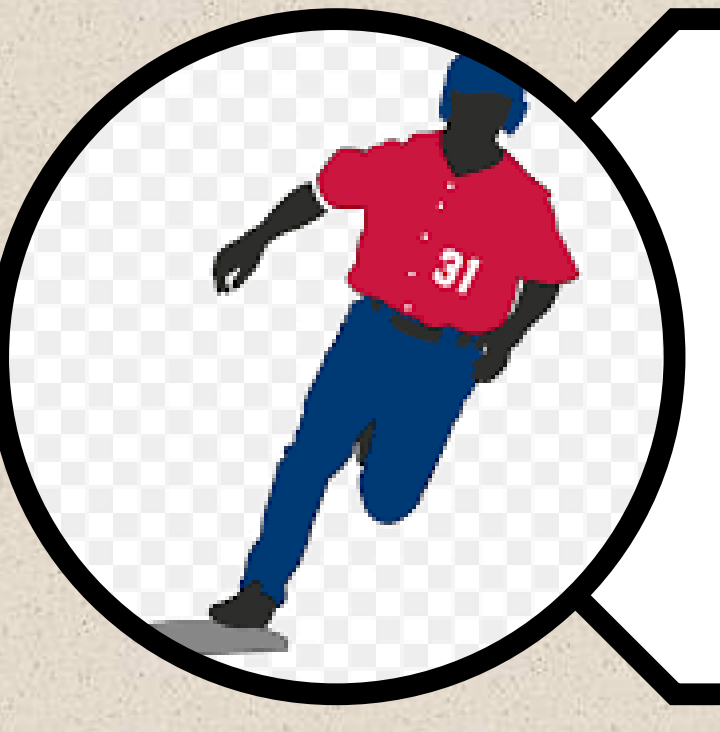
Eccentric Training Program

- After assigned to a group, each participant began an eccentric strength training program.
- DN group received DN intervention twice weekly on top of eccentric training protocol.



Asklings H-Test

- Participants performed the Asklings H-Test to evaluate return to play readiness. Each participant filled out a VAS scale for pain and insecurity experienced during test.



Return to Play and Data Analysis

- After passing the H-Test, participant data was collected and they could return to competition.
- Descriptive statistics and a paired sample T-test was conducted to see if there was any significance between the two groups.



'The Extender'. This exercise was completed twice daily for three sets with twelve repetitions (3X12 each leg).



'The Diver'. This exercise was completed once every other day for three sets of six repetitions (3X6 each leg).



'The Glider'. This exercise was completed every third day for three sets of four repetitions (3X4 each leg).

Discussion

- Reduced return to play time due to DN intervention could offer significant improvements to rehabilitation protocols for HSIs in the future.
- Shorter return to play time offers implications for future research to look into the actual mechanisms of DN and what happens on a neurochemical level.
- One limitation of this study was that the area in which the HSI occurred along the hamstring muscle group (proximal or distal) was not standardized. Injuries in different areas along the hamstring muscle may have healing characteristics that skew return to play time.

Acknowledgements

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