

The Influence of Yoga on Flexibility Characteristics among NCAA Division I Intercollegiate Baseball Athletes

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Introduction

It is documented that the typical NCAA Division I baseball athlete will participate in approximately 60 baseball games and 53 practices during a typical 90-day season. In a recently published review examining the incidence and type of injuries among intercollegiate baseball players, it was reported that Division I players experienced 6.64 game injuries per 1000 athlete exposures and 2.34 practice injuries per 1000 athlete exposures (Dick, Sauers, Agel et al., 2007). For baseball athletes, athletic trainers, and coaches, understanding injury mechanisms and developing injury prevention techniques are areas of valued research for both player health and player performance. Some injuries, such as those seen when players make contact with another player or surface, are difficult to prevent. However, several studies indicate that some of the most common, non-contact injuries sustained; for example, a pulled hamstring, are potentially preventable through specialized forms of physical training (Sauers, August, & Snyder, 2007; Whitley, 2007; Fleisig, Andrews, Dillman & Escamilla, 1995). Physical training that focuses on improving flexibility, such as yoga, is one suggestion that has been made. "Yoga" is a training ideology that employs a combination of static and dynamic whole body positions intending to enhance segment and joint range of motion. One of its unique qualities is that it requires participants to conduct these actions in a multi-planar manner, more similar to the movements that players employ during games and practice and unlike the movements seen in traditional sports' stretching. This yoga program was designed specifically for the sport of baseball and reflects the biomechanical needs of athletes engaged in playing baseball.

Although many coaches, athletes and trainers hold the belief that stretching can prevent injuries, there are surprisingly few quality studies concerning stretching and its relationship to injury prevention. To date, there are almost no similar studies examining yoga. Most of the previous research on stretching has 1) focused on an acute bout of stretching prior to an athletic performance; 2) been single bout or short duration design; and 3) used untrained participants rather than trained athletes. Well-designed research studying the effects of stretching at regular intervals for injury prevention in elite athletes is needed in order to determine if stretching should be a regular component of training. This research is ground-breaking in that 1) it is a consistent component of the team's training program; 2) it has a longitudinal design; and 3) it employs the use of elite participants. This three-part study is designed to examine the longitudinal effects of a sport-specific yoga program at regular intervals on increasing flexibility, preventing injuries, and enhancing performance in NCAA Division I baseball players.

Methods

The participants are The Eastern Michigan University Baseball Team (N=30, 19.42±1.37 years). After receiving permission for this study from EMU's Human Subjects Committee, head trainer, and baseball coach, players were recruited during a team meeting. No coaches were present in order to reflect a state of non-coercion. Players of age signed all necessary consent forms. Permission for the one underage participant was obtained from his parents. Only players cleared to play by the medical staff participated.

Part One of this research was designed to show that this yoga program would increase relevant flexibility. Participants practiced yoga 2x/week for 45 minutes/session. One of the

unique aspects of this study is that all yoga sessions have been/are being lead by the researcher. This is in contrast to many flexibility studies in which participants are left on their own to stretch from pictures or along with a DVD. By having guided sessions, the participants' safety was insured by having an expert give direct feedback. This also allowed the researcher to adapt protocols to the participants' progress. In each session, players were encouraged to perform at their best. Unlike many studies which exclude the details of their protocols, each of these sessions has been documented along with room temperature and environmental conditions. The sessions between pre-test and post-test lasted for 12 weeks.

Participants' flexibility was measured and recorded before sessions began in September 2007, and the same tests were repeated in December 2007. Pre-test and post-test consisted of flexibility tests relevant to the game of baseball. Some familiar tests, such as the sit-and-reach, groin angle and shoulder extension were employed, while other tests were custom designed for baseball using a functional training grid.

Results

The results showed that overall averages in flexibility increased. Average percent improvements were: sit-and-reach 45%, groin angle 2%, seated trunk rotation right and left 2.6% and 2.9%, standing trunk rotation right and left 5.7% and 3.2%, standing one-legged cross reach right and left 11.7% and 15.5%, and shoulder extension 20%. These outcomes were considered successful, although the post-test results may have been affected by the participants' intense weight training session the day before. This concludes Part One of this study.

Currently, the baseball season is just beginning and data for Part two of the study will be collected to examine any changes change in number of injuries and types of injuries during the season. By examining injury data, it will be determined whether the stretching protocols had any impact on injuries compared to previous years. Part Three of this study will be to look at the impact of increases in flexibility on performance factors. Does an increase in flexibility lead to faster running times, increase bat angular velocity, or increased throwing velocity?

Future Research Recommendations

In further research, there are some changes that would be useful in solidifying outcomes: 1) Use another Division I baseball team as a control; 2) Test performance factors at the same time as flexibility; 3) Change some testing procedures, such as adding PVC bar placed on shoulders during twist tests to maintain level shoulders; 4) check weight training schedule and arrange for post-test accordingly.

Contribution to field

This study is the first of its kind contributing to knowledge concerning the use of a yoga program to prevent injuries in elite athletes. Although many claims are made about the benefits of yoga, yoga itself has rarely been looked at from a scientific standpoint. Recent events in the world of baseball regarding the use of Human Growth Hormone show that in the competitive world of sports, athletes will sometimes seek drastic means to reduce their injury time and enhance performance. Showing that there is a natural way to reduce injuries, reduce recovery time and even enhance performance without harmful agents will be of tremendous benefit to athletes in general, but particularly to youth in sports. In short, it appears that a well-designed and consistent yoga program can potentially do everything the HGH promises to do, and perhaps even more.

