

## ***Effects of a Yoga Intervention on Male Collegiate Baseball Players***

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***Introduction:*** Rigorous and constant training of a male collegiate baseball player, particularly during winter pre-season training, has been identified as the cause of various overuse injuries. These injuries may include muscle strains, stress fractures, tendonosis, spondylolithesis and shoulder impingement. Other injuries include rotator cuff tears, shoulder dislocations, ulnar collateral ligament tears, and anterior cruciate ligament/medial collateral ligament tears<sup>6,9</sup>. Studies show that shoulder and elbow injuries are the most common baseball injuries (51.2%), followed by knee injuries (31.8%)<sup>3,1,5</sup>. Spinal injuries such as disc herniations, facet joint pain, sacroiliac pain, and/or stenosis are common in player positions, due to the high demand for spinal and core motion and control, accounting for about 12% of injuries<sup>2</sup>. While these injuries vary in location and nature, many can be partially attributed to decreased flexibility, ROM, and joint integrity. Weak core and lack of dynamic stability at the shoulder girdle and trunk may also contribute to these injury rates<sup>2</sup>. Research shows that participation in yoga can improve flexibility and joint range of motion, upper body and core muscular dynamic strength and endurance, and health perception<sup>6</sup>. To date, there is minimal research on the effects of yoga on injuries for baseball players, and even less for the effects of a team-specific yoga program. One study found that yoga was useful in reducing injury rates when delivered in a sport specific sequence<sup>8</sup>. The purpose of this study was to examine the effect of a specialized yoga program on musculoskeletal movement in collegiate baseball players. It was hypothesized that participation in a 12- week yoga program

would increase muscle flexibility and range in targeted areas of the spine, shoulders and hips, as well as an increase in core strength.

**Methods:** Eleven male collegiate baseball players ( $\bar{x}$  ht:1.8m,  $\bar{x}$  wt:85.5 kg,  $\bar{x}$  age: 20.8yrs) were recruited for the study and completed the informed consent as approved by the Ithaca College Institutional Review Board. Prior to the start of the yoga program, select range of motion (ROM), strength and flexibility tests were performed. Hip and shoulder ROM was tested using a standard goniometer, an inclinometer was used to measure spinal ROM, and scapula positioning in three different planes was determined using a tape measure for linear measurements. Appropriate flexibility tests were administered to measure the flexibility of the hamstrings, quadriceps, and latissimus dorsi. Total body movement was assessed using the Functional Movement Screen (FMS), a commonly used series of tests which objectively measures a variety of functional movements performed during athletic activities. Core strength was assessed using the 3-way plank test.

Following this testing, participants completed a 12-week yoga program with sessions twice per week. The yoga sessions were led by one of the student researchers who is a certified yoga instructor. This specific program was designed to increase total body movement, focusing on hip flexor/extensors, quadriceps, hamstrings, gastrocnemius/soleus, pectoral muscles, intercostal muscles, shoulder flexibility, spine flexibility, core strength, and strength of the shoulder and scapular stabilizers. Postures included static and dynamic stability with deep stretch postures held for a minimum of sixty seconds. Following this 12-week program, the same tests and measures of ROM, flexibility, functional movement, core strength and scapular positioning were repeated.

**Results:** At the time of abstract submission, data is still being analyzed but the results will be available prior to the date of presentation for the Whalen Symposium.

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