Abstracts

Seth Ahlquist MD UNITED STATES
Brian T. Feeley MD UNITED STATES
Emily M. Miller MD UNITED STATES
Sharon L. Hame MD UNITED STATES

Summary:

When compared to late specialists, college basketball players who specialized early had similar career lengths and rates of time-loss injury, scholarship attainment, and recruitment.

Data:

Objectives: There has been a trend towards single-sport specialization at increasingly younger ages amongst youth athletes. Early specialization has been associated with increased injury rates and reduced career longevity in professional basketball players. However, the effects of early specialization on injury and longevity in college basketball have not been studied. Further, the effects on other important career markers such as recruitment and scholarship attainment are not well understood. The purpose of this study is to determine whether associations exist between early specialization and injury risk, recruitment, scholarship attainment, and career longevity in college basketball athletes.

Methods: This study surveyed former basketball student-athletes from multiple American colleges who graduated between 1960 and 2018, and current athletes who completed at least one season of basketball. Demographics, age of specialization, time-loss injury history, scholarship attainment, recruitment status, and longevity of college basketball career were obtained. Early specialization was defined as narrowing participation to a single sport (basketball) before age 14. Athletes were specifically queried for sports-related injuries that resulted in more than 30 days out of sport or were season-ending. Chi-square and Fisher’s exact test were performed to identify significant differences. Results: One hundred and eight basketball players completed the survey, including 6 current athletes and 102 former athletes. There were 54 males and 54 females. Fourteen athletes were classified as early specialists (before age 14) and 94 athletes were classified as late specialists (age 14 and older). There were no significant differences between early and late specialists in terms of rate of injury (14.3% vs. 31.5%; p = 0.23), rate of surgery for a sports injury (14.3% vs. 18.5%; p = 1.0), or mean college basketball career length (3.21 years vs. 3.09 years; p = 0.4). There was also no significant difference in scholarship attainment (69.2% vs. 66.3%; p = 1.0) or recruitment status (71.4% vs. 71.2%; p = 0.76) between cohorts. Between females and males, there was no significant difference in rate of early specialization (9.3% vs. 14.8%; p = 0.38). There were no significant differences in rates of injury (30.2% vs. 30.2%; p = 1.0), surgery (23.0% vs. 13.0%; p = 0.17), scholarship attainment (72.2% vs. 62.8%; p = 0.3), or recruitment (72.2% vs. 79.3%; p = 0.4). Females on average had a longer collegiate career length than males (3.95 years vs. 2.89 years; p = 0.03). Conclusions: Early specializing college basketball players did not experience increased rates of injury, surgery, or decreased collegiate basketball career longevity. Early specialists were also not more likely to be recruited or to receive a scholarship. These findings suggest that early specialization may not be a risk factor for injury, need for surgery, or attrition in the collegiate basketball population. These findings also suggest that early specialization may not be necessary for recruitment or scholarship attainment in college basketball. Further prospective study evaluating all injury types, including overuse injuries, is warranted to better understand the effects of early sport specialization in this population.

Category: Sports Medicine

Faims Study: The Future Of Artificial Intelligence In Medicine And Surgery; A Study Of Healthcare Professionals’ Perceptions

Abstract ID# 23012
All Authors:
Eshak Bahbah MD UNITED KINGDOM
Ahmed Elgebaly MD UNITED KINGDOM
Zuhaib Shahid MBBS, MRCS UNITED KINGDOM
Ahmed Elgebaly MD UNITED KINGDOM

Summary:

Artificial intelligence (AI) holds the promise to revolutionise patient healthcare. However, this often not well perceived. We aimed to assess the health professionals’ perception of AI and its use in daily practice. Methods: This was a cross-sectional study that distributed a self-administered online survey targeting healthcare professionals. The survey consisted of 20 Likert scale questions that assessed different aspects of the perception of AI in healthcare. Results: A total of 503 responses were received. One-third were consultants, 27.4% were trainees, 23.3% were team members, and 12.7% were team leaders. Most participants were hospital doctors (33.1%). Majority agreed that AI has a role in healthcare and believed that AI would make the healthcare process more efficient. Over half believed that AI would reduce errors in patient care. The healthcare professional perceived that AI can be effective at diagnosing patients (81.29%), making better decisions (28.07%), healthcare education and training (86.67%), and enhancing the physician’s role (86.67%). About half the participants had faith in the security of AI-based technologies, 83.10% were comfortable with using the data obtained by AI for public health and research, and 26.51% had confidence in using the data for commercial purposes. Only a few respondents (14.6%) thought that AI would replace doctors in the future, and 49.19% agreed that AI would produce errors in patient care. Conclusions: The level of healthcare professionals’ perception towards AI is acceptable but not optimal. Unlike research and public health, commercial AI data use is not acceptable by many healthcare professionals.

Data:

Aim: Artificial intelligence (AI) holds the promise to revolutionise patient healthcare. However, this often not well perceived. We aimed to assess the health professionals’ perception of AI and its use in daily practice. Methods: This was a cross-sectional study that distributed a self-administered online survey targeting healthcare professionals. The survey consisted of 20 S-Likert scale questions that assessed different aspects of the perception of AI in healthcare. Results: A total of 503 responses were received. One-third were consultants, 27.4% were trainees, 23.3% were team members, and 12.7% were team leaders. Most participants were hospital doctors (33.1%). Majority agreed that AI has a role in healthcare and believed that AI would make the healthcare process more efficient. Over half believed that AI would reduce errors in patient care. The healthcare professional perceived that AI can be effective at diagnosing patients (81.29%), making better decisions (28.07%), healthcare education and training (86.67%), and enhancing the physician’s role (86.67%). About half the participants had faith in the security of AI-based technologies, 83.10% were comfortable with using the data obtained by AI for public health and research, and 26.51% had confidence in using the data for commercial purposes. Only a few respondents (14.6%) thought that AI would replace doctors in the future, and 49.19% agreed that AI would produce errors in patient care. Conclusions: The level of healthcare professionals’ perception towards AI is acceptable but not optimal. Unlike research and public health, commercial AI data use is not acceptable by many healthcare professionals.

Category: Sports Medicine

Adductor Muscle Injuries in Major League Soccer: A Decade Long Analysis of Injury Rate, Associated Factors, and Return to Play?

Abstract ID# 23265
All Authors:
Brian Forsythe MD UNITED STATES
Bert R. Mandelbaum MD, Dhl(Hon) UNITED STATES
Vikranth R Mirle BS UNITED STATES
Zachary Levine BS UNITED STATES
Vahram Gamsarian BE UNITED STATES
Aditya Narayan Krishnan BS UNITED STATES
Elyse Berlinberg BS UNITED STATES
Eric Giza MD UNITED STATES
Margot Putukian MD UNITED STATES
Holly Silvers PhD, MPT UNITED STATES

Summary:

A epidemiological analysis of adductor injuries in MLS athletes over a 10 year period studying factors affecting return to sport time shows increased return to sport time overall and decreased re-injury rate.

Data:

Purpose: To examine (1) the incidence of adductor muscle injuries in MLS athletes, (2) return-to-sport (RTP) following adductor injury, (3) investigate conditions that are associated with increased time to RTP. Methodology: The MLS Injury Surveillance database was queried for athletes with adductor injuries from 2009 to 2021. An adductor injury was defined as an injury involving the adductor group that required medical attention. Demographic characteristics (i.e., age, height, weight, player position, seasons played) and injury characteristics (laterality, setting of injury, activity during onset, severity, management, RTP, and re-injury) were used for descriptive analysis. Results: 1501 total injuries were recorded between 2009 and 2021 in 859 MLS players. The median absence from sport per injury was 6.0 days (mean: 17.02 ± 51.7 days). RTP post injury significantly increased from 14.4 days in 2009-2015 to 19.7 in 2016-2021 (p=0.043). Of the 1501 total injuries, 437 (29.1%) were re-injuries. Players who experienced re-injury had a decreased time to RTP after index injury compared to players without re-injury (16.6 days vs 20.6 days, p=0.18). Re-injury rate decreased from 40.4% in 2010-2015 to 33.2% in 2016-2021 (p = 0.0040). Players with acute contact injuries trended toward more missed time vs. chronic injuries (p=0.065). Other factors analyzed including age group, player position, weather conditions and field type, did not significantly affect RTP. Conclusion: The median return to sport time after an adductor injury in the MLS between 2009-2021 was 6 days, and the re-injury rate was high (29.1%).? Comparing injuries between 2011–2015
and 2016-2021, there was a 36.8% increase in days missed for an adductor injury even with a similar proportion of injury severity in both groups. Analysis did not identify any player or injury characteristics including position, weather condition, or field type significantly associated with RTP. The current findings suggest that a high risk of re-injury has contributed to employment of a longer rehabilitation period before RTP to prevent re-injury. These lengthened timelines might be justified given the significant decrease in adductor re-injury rate between 2010-2015 and 2016-2021 seasons (p = 0.0040).

Category: Sports Medicine

The Cytokine Profile of Mesenchymal Stem Cells Changes with Culture Expansion

Abstract ID# 23268
All Authors:
Jacob G Calcei MD UNITED STATES
Tracey L Bonfield PhD UNITED STATES
Ryan James Furdock MD UNITED STATES
David Richard Fletcher BS UNITED STATES
Evan Rudo BS UNITED STATES
James E. Voos MD

Summary:
Culture-expanding human, bone marrow-derived mesenchymal stem cells alters their cytokine profile, impacting their regenerative potential.

Data:
Introduction: Biologic treatments for articular cartilage injury and degenerative joint disease are increasing in demand by active patients. Human bone marrow derived mesenchymal stem cells (BM-MSCs) have garnered interest as a treatment for their ability to differentiate into cells of chondrogenic lineage and their production of cytokines and/or growth factors. Culture expansion of BM-MSCs has the potential to enhance these capabilities. During expansion, BM-MSCs undergo multiple rounds of purification and multiplication, termed “passages”, which may to alter potency and clinical efficacy. We sought to evaluate the change in cytokine profile during cell expansion. Methods: Nine BM-MSC cell lines from 3 human donors underwent an institutional culture expansion protocol. Levels of OA-related cytokines (IL-1ß, IL-6, IL-8, IL-10, Stem cell Factor [SCF], Stem Cell Derived Factor-alpha [SDF-a]) were evaluated at three stages of culture expansion: passage 2 (P2), passage 3 (P3), and passage 4 (P4) utilizing Luminex multiplexing technology. Results: BM-MSC culture expansion altered cytokine profiles in vitro. BM-MSC specific cytokines had defined trends during passage from P2 to P3 and then to P4 (Figure 1). Passage from P2 to P3 demonstrated a decrease in SDF-a, IL-6 and SCF (P<0.05). Although the number of samples evaluated were fewer, the trend continued to be less at P4 (P<0.05). For IL-8 and IL-1ß, the transition from P2 to P3 resulted in an increase in cytokine production (P<0.05), but by P4 trended downward. Discussion and Conclusion: BM-MSC culture expansion causes changes in OA-relevant cytokines. Further study of the variation in cytokine profile at other stages of BM-MSC preparation (e.g., bone marrow aspirate, P0, P1, through P4) will clarify differences between cytokine profiles of currently used OA therapies, such as bone marrow aspirate concentrate, and expanded BM-MSCs. This study provides initial insights that may guide the process of culture-expansion when using BM-MSCs to treat degenerative joint disease.