

Youth Early Sport Specialization Summit

Brief Summary of Process and Preliminary Findings

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Marriot Marquis Hotel
Houston, Texas

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YOUTH EARLY SPORT SPECIALIZATION SUMMIT OVERVIEW

Summit Background and Purpose

The physical and psychological benefits of participation in youth sports are widely acknowledged, with an estimated 60 million youth participating in organized sports in the US. Children are often introduced to sports at an early age to encourage physical activity, to engage in social interaction, and for enjoyment. However sports specialization, conceptually defined as intense training in a single sport to the exclusion of other types of physical activity, is fast becoming the norm in youth sports. Formerly relevant concepts such as unstructured free-play and sport sampling are diminishing as children and adolescents face mounting pressure at younger ages to choose one sport and participate on organized, high-level, year-round teams in that single, chosen sport. The current trend toward youth sport specialization (YSS) and year-round training raises concerns about the immediate and longer-term health and safety of youth. Specifically, YSS has been associated with an increased risk for psychological stress, burnout, and overuse injury. However, others argue that YSS is beneficial in that it creates opportunity for more specific training thereby enhancing skill sets and increasing performance at a younger age—thus in theory increasing the possibility of current and future athletic success for these specialized athletes. Needless to say, the benefits and risks of YSS are not yet fully understood.

This research summit fills a unique and important need in the area of youth sports and physical activity. Although the evidence-base regarding the effects of YSS on overuse injuries, overtraining, and burnout continues to grow, many research questions remain (including more accurate characterization of potential benefits of YSS), and no consensus exist on how best to approach the potential risks, possible benefits, and the trend toward increased YSS. Although a handful of conferences and workshops have been held by various professional societies in recent years on the topic of YSS (e.g., AOSSM research workshop, “Early Sports Specialization and Return-to-Play Guidelines”), this is the first conference with the overall goal of producing a national research agenda, which is essential and necessary to answer questions and solve issues associated with YSS. To the best of our knowledge, this research conference will also be the first of its kind to include advocacy groups and governing bodies as key stakeholders in identifying barriers and limitations to youth sports participation and defining a national research agenda. Improving the health and safety of our youth and fully understanding the effects of YSS while maximizing the benefits of sports participation and physical activity requires a multi-faceted and multi-disciplined approach that otherwise cannot be addressed without this conference. The scientific reviews conducted in preparation for the conference and the research roadmap developed after the conclusion of the conference will provide a clear, evidence-based path towards developing the necessary guidelines for the health and development of young athletes.

Summit Goals

The goals of this research summit are as follows:

- 1. To systematically review, synthesize and present the scientific evidence on the effects of youth sports specialization on youth athlete health and development**

Writing groups have completed their review and synthesis of the scientific literature leading up to this research summit, including the association of YSS with (1) Child task and athlete development and performance, (2) Health-related quality of life and musculoskeletal injury risk and (3) implementation of guidelines and recommendations. Results of these reviews will be presented during the conference and will help facilitate interactions and solution-oriented discussions among key stakeholders. Results from the reviews and important takeaways from the conference will then be immediately used to develop an evidence-based research agenda.

- 2. To produce a national research roadmap addressing gaps in knowledge as they relate to the health and safety of organized child and adolescent sport/physical-activity participation**

By involving multidisciplinary and diverse stakeholders in this conference, we will construct a collaborative scientific statement regarding the existing evidence and knowledge gaps surrounding sport specialization. As a result of the unified, collaborative infrastructure, dissemination of our key, central findings will occur through numerous academic, professional and public mechanisms.

- 3. To identify sport specific research gaps and needs**

Sport-specific breakout sessions will allow stakeholders for various sports to identify needs and issues related to youth sport participation in their respective sport.

Summit Leadership and Writing Groups

The research summit agenda is centered around three topic areas that cover unique components of youth sport specialization. Multidisciplinary writing groups (see Table 1) were formed to systematically review and synthesize the existing scientific literature in each topic area. Topic areas include:

- 1. The impact of YSS on Child and Athlete Performance and Development:** This group focused on the current evidence-base for age appropriate skill development in youth who specialize as it relates to the natural growth and development of children, athlete motor control pattern development, and their future success as elite athletes. The writing group affiliated with this topic will publish a systematic review on the extent to which studies address the effect of sport specialization on task and career performance metrics.
- 2. The Effect of YSS Injury, Health and Physical Activity**
This group focused on a comprehensive review of the literature on the effects of YSS on musculoskeletal injury risk, health related Quality of Life, and future participation in physical activity. The writing group will publish a systematic review that considers studies that have musculoskeletal injury and conditions (overuse and acute) as an endpoint as well as studies with sports termination and athlete quality of life endpoints.
- 3. Guidelines and Recommendations for Youth Sport Participation:** This group focused on a comprehensive review of existing recommendations for youth sports participation, including guidelines put in place by various health and sports organizations, such as the health and safety committees of national sports administering bodies (including US Olympic sporting bodies and collegiate and high schools sports administering organizations) and the quality of evidence supporting such guidelines. The inclusion of this topic will assist in focusing the overall final recommendations and translating future research findings into practice. Of necessity, this writing group will publish a narrative review combining systematically peer-reviewed literature and current recommendations/guidelines from health and sports organizations.

Table 1: 2019 Research Summit Leadership and Writing Groups**American Medical Society for Sports Medicine Leadership**

Executive Director	Jim Griffith, MBA, CAE, AMSSM- Leawood, Kansas
AMSSM President	Chad A. Asplund, MD, MPH, Georgia Southern University
Chair of CRN Leadership Team	Col. Anthony Beutler, MD, Uniformed Services University Health Sciences
AMSSM Research Director	Stephanie Kliethermes, PhD, University of Wisconsin-Madison
Research Conference Co-Chair	Steve Marshall, PhD, University of North-Carolina
Research Conference Co-Chair	Daniel Herman, MD, PhD, University of Florida
Research Conference Co-Chair	Neeru Jayanthi, MD, Emory University

Research Summit Writing Group Membership**Child & Athlete Performance and Development****Neeru Jayanthi, MD§****Emory University***Kyle Nagle, MD §****Seattle Children's Hospital***Jean Cote, PhD***Queen's University***Avery Faigenbaum, EdD***The College of New Jersey***Robert Malina, PhD***University of Texas at Austin***Drew Watson, MD***University of Wisconsin-Madison***Brian Feeley, MD***University of California- San Francisco***Stephanie Kliethermes, PhD ****University of Wisconsin-Madison***Injury, Health and Physical Activity****Steve Marshall, PhD §****University of North Carolina Chapel Hill***Cynthia LaBella, MD §****Northwestern University***Mackenzie Herzog, MPH §****University of North Carolina Chapel Hill***Alison Brooks, MD, MPH ****University of Wisconsin-Madison***Min Kocher, MD***Boston Children's Hospital***David Bell, PhD, ATC***University of Wisconsin-Madison***Dawn Comstock, PhD***University of Colorado-Denver***Guidelines and Recommendations for Youth Sport Participation****Dan Herman, MD, PhD §****University of Florida***Adam Tenforde, MD §****Harvard University***Joel Brenner, MD, MPH ****Children's Hospital of the King's Daughters***Greg Myer, PhD***Cincinnati Children's Hospital***John DiFiori, MD ****Hospital for Special Surgery***Vicki Nelson, MD***Greenville Health System***Alicia Montalvo, PhD, ATC***Florida International University*

§ co-chair of writing group, * member of P&W committee

BRIEF SUMMARY OF FINDINGS*

*a full summary will be published in Fall 2019

Impact of Youth Sport Specialization on child and athlete performance and long-term development

Despite common beliefs otherwise, a growing body of literature suggests YSS is not a necessary pathway to achieve elite (D1 collegiate, professional, national) performance in a sport. Youth who specialize early and those who do not specialize until mid- adolescence both achieve elite performance; however, the reasons why both competing pathways lead to elite success have yet to be elucidated. There is likely a sport specific association between YSS and level of athletic performance; however, no studies directly addressing the association between YSS and sport-specific development were identified.

There is a need for prospective research to assess the specialization and sport sampling pathways to elite performance. Moreover, sport-specific research should be conducted to address the effect of YSS on skill development and training volume, and its association with level of athletic performance.

Effect of Youth Sport Specialization on Injury, Health and Physical Activity

A growing body of literature documents negative health outcomes, notably injury, associated with YSS. Associations between YSS and injury risk persist after controlling for training volume, and thus likely accrue from the effect of specialization, i.e. are not simply due to increased training volume. Further research is needed to deepen our understanding of the observed associations between YSS and outcomes reported in the literature to date. Continuing to build a scientific base on the effects of YSS will provide further insights into the epidemiology of YSS.

Priority should be placed on the development, dissemination, adoption, and implementation of strategies to address YSS – and these strategies should be sport specific in order to maximize impact. Research on injury risk and other adverse health effects of YSS should continue in order to increase the scientific understanding of the relationship between YSS and negative health outcomes. Methodological studies are needed to improve methods for assessing YSS. Specifically, there is a need for consistent and reliable measures of YSS and YSS related outcomes (including injury).

Alternatives, Interventions & Guidelines for Youth Sport Participation

YSS recommendations have been proposed by a variety of organizations; however, most do not include a comprehensive approach of both youth sport participation and specialization. Organizational recommendations lack specifics on athlete psychological development and access to facilities. Governing bodies within a sport do not consistently include information regarding YSS. Recommendations are often written without well-defined terms, standards, or metrics by which they can be effectively implemented. Lastly, recommendations regarding YSS are primarily in the form of expert opinions informed by a small body of evidence.

There is a need to create consistent recommendations regarding YSS that consider all domains pertinent to youth athletes, including athlete psychological and physical development, access to appropriate facilities and mentoring, and guidelines regarding when and how to consider sport specialization. Recommendations should be quantifiable where possible to facilitate translation into the community. Research should be conducted regarding the efficacy of evidence-based recommendations and how best to implement these recommendations into a community setting.

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