

Reasoning of dissertation topic and competency of potential supervisor for admission onto joint LSU and TU doctoral studies in 2021

Area of research (title and code)	Natural science
Field of research (title and code)	Biology (N 010)
Topic of research	Physical preparation program for injury prevention
Institution	LSU

Potential supervisor

Pedagogical and scientific degree	Name, surname	Academic position
Assoc. Prof., PhD	Jūratė Stanislovaitienė	Assoc. Prof.

Short reasoning of proposed dissertation topic

Title
The effect of different physical preparation program on lower limb injuries in youth football
<p>Short research description (including aims and objectives) (maximum 1500 characters).</p> <p>The main aim of the topic for the doctoral thesis is to evaluate the effect of different physical preparation program on lower limb injuries in youth football. Objectives: i) to evaluate and monitor the muscle imbalance during the preparation and competition period; ii) to evaluate and monitor the internal and external training load during the preparation and competition period and assess the risk of injury; iii) to evaluate the effect of different physical preparation program – lower limb injury prevention program – on muscle imbalance, physical and technical performances.</p>
<p>Relevance of the problem, its novelty at national and international level (maximum 1500 characters).</p> <p>Soccer is regarded as a high intensity intermittent contact sport exposing players to continual physical, technical, tactical, psychological, and physiological demands (Carling, 2010; Dellal et al., 2011; Owen et al., 2011; Owen et al., 2013). At the elite level, the regular demands of match play and training performed during the season's entirety makes players susceptible to injury. Intuitively, losing players to injury will be to the detriment of team success (Arnason et al., 2008), particularly for teams unable to replace players of similar abilities due to limited resources. Therefore, injury prevention programs have gained greater impetus as part of the player's daily training schedule. Although the cause of injury is not always known, there are a number possible factors that may increase its incidence. These may include insufficient warm-up, poor flexibility, muscle imbalances, muscle weakness, neural tension, fatigue and previous injury (Woods, Bishop, and Jones, 2007; Zakas et al., 2005; Parry and Drust, 2006; Croisier et al., 2008; Croisier, 2004; Junge and Dvorak, 2004; Janusevicius et al., 2017; 2020). Thus, revising and implementing training programs that attempt to address some of these issues would favorably affect strength and conditioning coaches.</p> <p>Hamstring injuries and reinjuries are one of the most important sport lesions in several sport activities, requiring sprinting and acceleration. In soccer, hamstring injuries cause an important rate of time loss. The hamstring injury risk factors may be subdivided in three categories: "primary injury risk factors" (i.e., the risk factors mainly causing a first lesion), "recurrent injury risk factors" (i.e., the risk that can cause a reinjury), and bivalent injury risk factors" (i.e., the risk factors that can cause both primary injuries and reinjuries) (Bisciotti et al., 2020). The high incidence of hamstring lesions caused consequently an important increase in hamstring injury research. However, although the prevention has increased paradoxically, epidemiological data do not show a loss in injuries and/or reinjuries but, on the contrary, they show an increase in hamstring injuries. This apparent paradox highlights the importance both of the improvement in the prevention programs quality and the criteria for return to play after hamstring injury.</p>

Research methods and possibilities for conducting these studies (maximum 1500 characters).

Subjects: youth football players (14 – 16 y) (control and experimental groups)

The external training load will be assessed using Catapult OptimEye S5 devices (Catapult Innovations, Melbourne, Australia).

Internal training load will be subjectively assessed using sRPE method (sRPE-TL); each player will be required to provide a global intensity score using the category ratio scale (CR-10 Borg's scale) (Borg, 1998) approximately 30 min after each training session or match answering to the question: "How intensive was your training session/match?" (Foster et al., 2001).

Readiness measured by HRV will be assessed using H10 Bluetooth heart - rate (HR) strap (Polar Electro, Kempele, Finland) paired with a freely available smartphone application (Elite HRV, Ashville, North Carolina, USA).

Asymmetry: Isokinetic dynamometer Biodex; Countermovement jump test (OptoJump) (with one and two legs);

Performance: 20-m sprint test (from start and flying) (OptoJump); shot the ball with instep kick and side-foot kick using dominant and non-dominant leg with a pocket radar (Pocket Radar, Inc. Santa Rosa, California)

Different physical preparation programs: i) exercises with high velocity elastic band; ii) supramaximal assisted sprints; iii) maximal kicks of the ball.

Please indicate the links between the proposed topic for the doctoral thesis and biomechanics / physical therapy / sports study programs.

The topic for the doctoral thesis is directly related with sports study programs. The topic is relevant for the sports study programs, as the interventions of different physical training programs will aim to improve not only the physical and technical fitness of young footballers, but also to reduce the risk of.

Is the proposed topic for the doctoral thesis related to currently funded research projects?

Please indicate the links between the proposed topic for the doctoral thesis and funded research projects


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Is the proposed topic for the doctoral thesis related to joint research with a foreign institution? Please indicate the links between the proposed topic for the doctoral thesis and research with a foreign institution

Assoc. Prof. Luka Milanovic – University of Zagreb, Faculty of Kinesiology; Lecturer of UEFA – Coaching Education at Croatian Football Federation

Currently I am supervisor of 0 doctoral students.

Supervisor


(signature)

Jūratė Stanislovaitienė

(Name, surname)

Date 05/03/2021