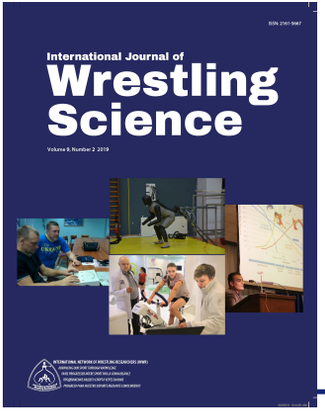

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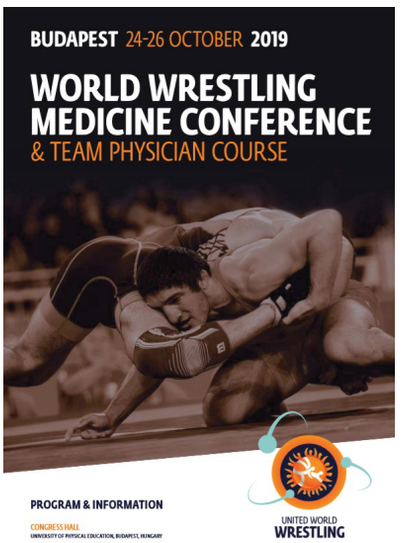

Special Section: Summaries of Presentations from the Wrestling Medicine Conference & Wrestling Team Physician Course, United World Wrestling, Budapest, October 24-26, 2019

EFFECTS OF LOW MOBILITY OF THE SPINE IN YOUNG MALE AND FEMALE WRESTLERS

Varvara Ioannidou, Evaggelia Makri & Ioannis Barbas

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EFFECTS OF LOW MOBILITY OF THE SPINE IN YOUNG MALE AND FEMALE WRESTLERS

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INTRODUCTION

Male wrestling is an Olympic discipline with a long international background that has been present in the modern Olympic Games since 1896. Female wrestling, has limited international experience compared to male. It was first included in a World Championship organized by FILA in 1987 and was not included in the Olympic program until Athens 2004.

Is a sport with enormous demands on the physical characteristics. It uses the upper and lower extremities, including falls, locking joints, immobilizations and various gripping techniques. It is characterized by a high-intensity intermittent effort lasting a total of 6 minutes (2 * 3-min bouts).
Physical and physiological characteristics

Wrestling as a sport demands several specific characteristics including:

- Muscular Strength and Endurance
- Aerobic-Anaerobic ability
- Power
- Speed

- Flexibility
- Mobility
- Coordination/motor skills
- Balance
- Body composition

Depending on his/her age and sports level a successful athlete should have:

- Technique
- Agility
- Analytical and Tactical skills
- Motivation
- Confidence
- Perform under pressure

Little research has been done on the effects of flexibility, especially in the spine, but also shoulder and the pelvic girdle and to what extent it affects wrestling. What is the role of these factors and posture in preventing injuries and thus the overall performance of the athlete?

Pros

- In both types of wrestling the possession of reasonable spinal curves might be an advantage as it gives the competitor:
  - Low center of gravity
  - Stability
  - Mobility
  - Balance

Cons

- Might be an important factor associated with increased kyphosis due to:
  - Extreme spinal flexion
  - Prolonged exercise
  - Psychological reasons

Stabilization of the spine

Spinal stabilization system consists of three elements:

- Neuromuscular control
- Passive(bones-ligaments)
- Active(muscles)

Stabilization is not all about power. Adequate sensory input (proprioception receptors) is essential in order first to alert the central nervous system about the interaction between the body and the environment and second to interpret that in the appropriate motion.

Kyphosis in young wrestlers

The normal development of the sagittal curvature of the spine is dependent on the interaction between heritable growth factors and the mechanical environment in which it grows.

It is believed that repetitive stress on the adolescent spine, due to large motions of the trunk in flexion/extension during excessive sports exercises can lead to juvenile kyphosis.

Characteristics
Rounded back with greater thoracic curve
Shoulders slouch forward
Scapula are in protraction because of the shortening of the pectoralis minor
Internal arm rotation mainly because of the shortening of the pectoralis major
The head tilts forward because of short cervical extensors
Thoracic rigidity/stiffness (mainly in extension and rotation of the thoracic vertebrae)

What is normal?
Spinal posture and the resultant changes during the entire pubertal growth period (at the ages of 11, 12, 13, 14 and 22 years) have not been reported until 2005. M. Poussa (2005)

Another pilot study in children during their second growth phase (6-11 years old) measured a mean kyphotic angle of 47.1° (SD±7.5) for all age groups. T.C Furian (2013)

Rajabi et al. (2010) reported the thoracic kyphosis for male wrestlers (15–24 years) at 41.77 degrees and for the age range of 25–44 years at 42.80 degrees.

There is only one study that has examined the body posture in female wrestlers aged 15 to 20, before and after specialized physical training. Sokolowski (2014)

Prehabilitation-Rehabilitation
Focus on:

- Core engagement
- Thoracic spine extention
- Scapula muscles activation
- Shoulder, pelvic, foot mobility
- Deep neck flexor muscle activation


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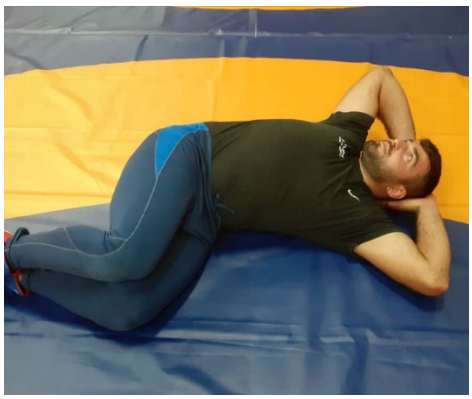


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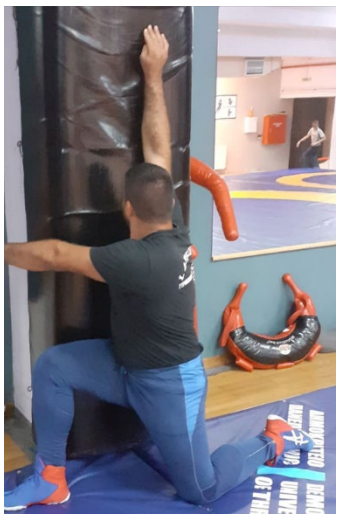


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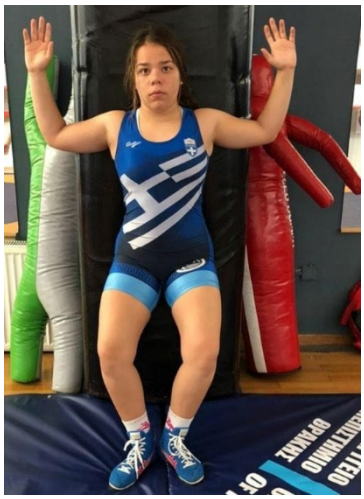

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