COURSE DESCRIPTION –
The importance of physiological spine extension - from birth to adulthood

Academic year 2025/2026

Course code		
Course title in	**Polish**	*Fizjologiczny wyprost kręgosłupa*
	English	*Physiological Alignment of the Spine*

1. LOCATION OF THE COURSE WITHIN THE SYSTEM OF STUDIES

1.1. Course Name	*The importance of physiological spine extension - from birth to adulthood*
1.2. Course Syllabus prepared by	*Dr Arkadiusz Żurawski,PhD in Health Sciences*
1.3. Contact details	*arkadiusz.zurawski@ujk.edu.pl*

2. GENERAL COURSE CHARACTERISTICS

2.1. Language of Instruction	*English*
2.2. Prerequisites *	*Anatomy, Physiology, Kinesiotherapy*

3. DETAILED COURSE CHARACTERISTICS

3.1. Form of Instruction		*Lectures*
3.2. Place of Instruction		*On-site classes conducted in UJK teaching facilities*
3.3. Form of assessment		*Credit with grade*
3.4. Teaching Methods		*Multimedia lecture presentations, case studies, guided discussion*
3.5. Bibliography	**Required reading**	*1.Kiebzak W. Application of Euclidean geometry in the assessment of body posture in a sitting position. Pol Ann Med. 2022;29(2):167–171.* *2.Kiebzak W, Żurawska J, Żurawski A. Ocena sEMG aktywności mięśnia prostego brzucha oraz mięśnia wielodzielnego w zależności od sposobu przyjmowania pozycji siedzącej. Fizjoterapia Polska. 2017;17(3):52–62.* *3.Vojta V. The Vojta Principle: The basic course on reflex locomotion. Springer, 2008.* *4.Neumann DA. Kinesiology of the Musculoskeletal System: Foundations for Rehabilitation. 3rd ed. Elsevier; 2017.* *5.Kendall FP, McCreary EK, Provance PG, Rodgers MM, Romani WA. Muscles: Testing and Function with Posture and Pain. 5th ed. Lippincott Williams & Wilkins; 2005.*
	Further reading	*1.Isayama T, Yasukouchi A. The relationships between lumbar curves, pelvic tilt and joint mobilities in different sitting postures in young adult males. Appl Human Sci. 1995;14(1):15–21.* *2.Caneiro JP, et al. The influence of different sitting postures on head/neck posture and muscle activity. Manual Therapy. 2010;15(1):54–60.* *3.Barrey C, Jund J, Noseda O, Roussouly P. Sagittal balance of the pelvis-spine complex and lumbar degenerative diseases. Eur Spine J. 2007;16(9):1459–1467.*

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED LEARNING OUTCOMES

4.1. Course Objectives (by form of instruction)

Lectures:

C1. To provide participants with theoretical knowledge regarding human postural and motor development from birth to adulthood, with particular emphasis on the role of physiological spinal extension in postural control and body biomechanics.

C2. To familiarize participants with the fundamentals of Euclidean geometry in analyzing the alignment of the sternum and sacrum and their interrelationships influencing body posture.

C3. To discuss contemporary concepts of global movement patterns and their relevance in planning postural re-education and the prevention of musculoskeletal disorders.

C4. To develop participants' competencies in critical thinking and in the analysis of scientific and clinical data related to posturology, rehabilitation, and neuromotor control.

4.2.Course content (by form of instruction)

Lecture:

1. Introduction to the Concept of Physiological Spinal Extension

- *Historical overview of the concept of extension*
- *Cultural and social changes in the perception of body posture*
- *The role of spinal extension in human biomechanics*

2. Ontogenesis of Posture and Development of Postural Control

- *Stages of motor and postural development from birth to adulthood*
- *Relationships between neuromotor development and body posture*
- *The impact of improper posture on spinal development*

3. Euclidean Geometry in Postural Assessment

- *The concept of the "common sense" alignment of the sternum and sacrum*
- *The sternum–sacrum–spinal curvature triangle: analysis of angles α, β, γ*
- *Biomechanical consequences of pelvic rotation and spinal curvature changes*
- *Clinical applications of geometric relationships in postural re-education*

4. Concepts of Global Movement Patterns in Postural Re-education

- *Overview of selected concepts (Vojta, Bobath, PNF, postural sets)*
- *Principles of integrating movement patterns in the therapy of postural disorders*
- *Clinical examples of extension pattern application*

4.3. Intended learning outcomes

	Upon successful completion of the course, the student
W01	demonstrates knowledge of the ontogenesis of physiological spinal extension and its significance in human postural development
W02	understands the principles of Euclidean geometry applied to the analysis of sternum and sacrum alignment and their influence on body posture
W03	understands the biomechanical and neurophysiological foundations of postural control
W04	knows the principles and applications of DIERS systems, ultrasound imaging (USG), and electromyography (EMG) in postural and neuromotor assessment.
U01	is able to analyze and interpret theoretical and clinical data concerning postural assessment and movement patterns
K01	is prepared to collaborate within an interdisciplinary team and exchange specialist knowledge in an international environment
K02	recognizes the importance of scientific foundations in clinical practice and makes decisions based on evidence-based practice (EBP)

4.4. Methods of assessment of the intended learning outcomes

Teaching outcomes (code)	Exam oral written/ *			Oral assessment			Practical assessment			Effort in class*			Self-study*			Group work*			Other (please specify) *		
	Form of classes			*Form of classes*			*Form of classes*			*Form of classes*			*Form of classes*			*Form of classes*			*Form of classes*		
	L	P/C	...	L	P/C	...	L	PC	...	L	P/C	...	L	P/C	...	L	PC	...	L	P/C	...
W01	+																				
W02	+																				
W03	+																				
W04	+																				
U01				+						+						+					
K01				+						+						+					
K02				+						+						+					

*delete as appropriate

4.5. Criteria for Assessing Learning Outcomes

Form of classes	Grade	Grading criteria
lecture (L)	3	*Demonstrates knowledge of the course content at the level of 61%–68%.*
	3,5	*Demonstrates knowledge of the course content at the level of 69%-76%*
	4	*Demonstrates knowledge of the course content at the level of 77%-84%*
	4,5	*Demonstrates knowledge of the course content at the level of 85%-92%*
	5	*Demonstrates knowledge of the course content at the level of 93%-100%*

Practical classeS (PC)	3	*Practical task performance at the level of 61%-68%*
	3,5	*Practical task performance at the level of 69%-76%*
	4	*Practical task performance at the level of 77%-84%*
	4,5	*Practical task performance at the level of 85%-92%*
	5	*Practical task performance at the level of 93%-100%*

5. BALANCE OF ECTS CREDITS – STUDENT'S WORK INPUT

Category	Student's workload	
	Full-time Studies	**Part-time Studies**
DIRECT PARTICIPATION (CONTACT HOURS WITH INSTRUCTOR)	*-*	*10*
Participation in lectures	-	10
Participation in classes/practical classes	-	-
STUDENT'S INDEPENDENT WORK (NON-CONTACT HOURS)	*-*	*15*
Preparation for the lecture	-	15
Preparation for classes/practical classes	-	-
TOTAL NUMBER OF HOURS	*-*	*25*
ECTS CREDITS for the course of study	**-**	1

*delete as appropriate

Approved for implementation *(date and signatures of course instructors for the given academic year)*

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