Erasmus+

Development of innovative training solutions in the field of functional evaluation aimed at updating of the curricula of health sciences schools

MODULE BIOMECHANICS FOUNDATIONS

Didactic Unit D: TECHNIQUES FOR THE INSTRUMENTAL ANALYSIS OF MOVEMENT AND FORCES

D.1 How can movements be measured and which parameters can be analyzed? What are its main applications?

Self-Questionnaire

Politechnika Śląska
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Self-questionnaire:

- Self-questionnaire aimed to test the knowledge acquired.
- It will include 5 objective questions with 4 answer options.
- Mark in bold the correct answer.

Type of questions:

- **Drag and drop into text:** Students select missing words or phrases and add them to text by dragging boxes to the correct location. Items may be grouped and used more than once.
- **Drag and drop markers:** Students drop markers onto a selected area on a background image. Unlike the drag and drop onto image question type, the are no predefined areas on the underlying that are visible to the student.
- **Drag and drop onto image:** Students make selections by dragging text, images or both to predefined boxes on a background image. Items may be grouped.
- **Matching:** A list of sub-questions is provided, along with a list of answers. The respondent must “match” the correct answers with each question.
- **Multichoice:** With the Multichoice question type you can create single-answer and multiple-answer questions, include pictures, sound or the other media in the question and/or answer options and weight individual answers.
- **Select missing words:** Students select a missing word or phrase from a dropdown menu. Items may be grouped and used more than once.
- **True/False:** In response to a question (that may include an image), the respondent selects from two options: True or False.

Question 1

To increase the accuracy in a 3D motion analysis using an optical system is recommended:

□ To use only two cameras.

□ B use a single model and a single camera.

□ C use at least three cameras.

□ D **use a complex model and multiple cameras.**

Question 2

The use of a reference system of known geometry and dimensions to calculate the fitting parameters in an optical motion analysis system is called

□ A Reconstruction

□ B Selection

□ C **Calibration**

□ D Orientation

Question 3

Inertial Motion Units (IMUs) are usually composed of these sensors:

□ To a biaxial accelerometer

□ B **an accelerometer, a gyroscope and a magnetometer.**

□ C an accelerometer in each axis and a magnetometer.

□ D none of the above.

Question 4

Mark the wrong answer:

□ A The goniometer provides the measurement of the relative joint angle between two segments.

□ B The inclinometers allow the measured angle to be recorded with respect to the vertical.

□ C **3D motion analysis systems are commonly used when the gesture to be evaluated is not complex and the relevant information is produced in a plane of motion.**

□ D Motion analysis systems without markers use the recognition of shapes or structures to follow during the analysis.

Question 5

Select the best fitting missing word from the dropdown menu.:

A Electronic inclinometer is an instrument that uses an **accelerometer** as a sensing element.

B The **gyroscope** measures the angular velocity, i.e. the speed of rotation of the sensor, in the three axes of space.

C The **active marker** of an optical system can provide more robust measurements.

D A **depth map** makes it possible to describe the distance by pixels from a point in space to the camera.

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