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NPTEL

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Courses » Mechanics of Human Movement

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Unit 6 - Week 4

Course outline

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Assignment 4

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2018-09-05, 23:59 IST.**

1) The scientific study of the measurements of the human body is known as _____ ***1 point***

- Physiology
- Anatomy
- Anthropometry
- Kinesiology

No, the answer is incorrect.
Score: 0

Accepted Answers:
Anthropometry

2) Anthropometric data consists of ***1 point***

- Body segmental masses
- Body segmental lengths
- Centre of mass locations of body segments
- Body segmental shapes

No, the answer is incorrect.
Score: 0

Accepted Answers:
Body segmental masses
Body segmental lengths
Centre of mass locations of body segments

3) The head being tipped backwards on the atlas is an example of _____ class lever in action ***1 point***

Score: 0

Accepted Answers:
First

4) The number of thoracic vertebra in the spinal column is: ***1 point***

- 12
- 7
- 5
- 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
12

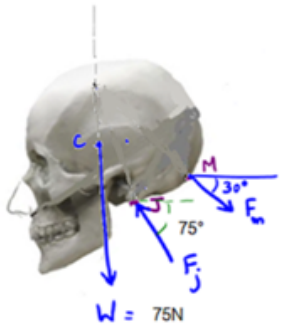
5) While analysing the skull with the following planar force system: the joint force at the atlantooccipital joint, muscle force of the neck extensor and the weight of the skull, the forces form a _____ system of vectors ***1 point***

- Concurrent
- Collinear
- Coplanar
- Non-concurrent

No, the answer is incorrect.
Score: 0

Accepted Answers:
Concurrent
Coplanar

6) Use the adjacent diagram to answer questions 6-7 ***1 point***



The tension in the neck extensor (F_m) for the configuration shown is _____

- 43.1N
- 27.4 N
- 35.3 N
- 12.8 N

No, the answer is incorrect.

Score: 0

Accepted Answers:
27.4 N

7) The joint force at the atlantooccipital joint for this configuration is **1 point**

- 91.8 N
- 52 N
- 154 N
- 35.3 N

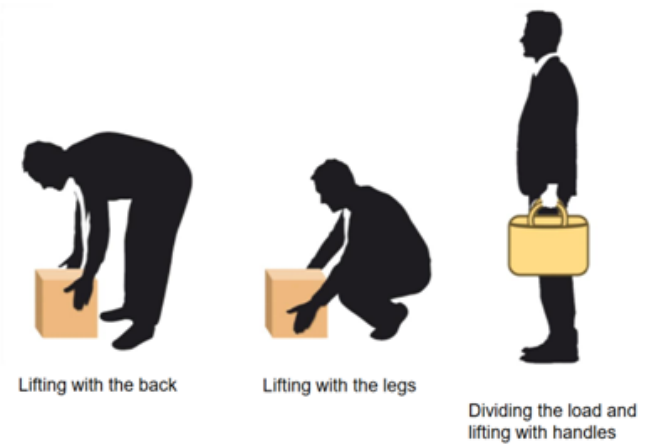
No, the answer is incorrect.
Score: 0

Accepted Answers:
91.8 N

8) Use this information for questions 8-11. **1 point**

A person (of body weight W_B and height H_B) is lifting a load W_L = 0.3W_B in three different ways as shown in the figure below. To determine the best way of lifting, you have to do a static analysis of the spine to study the loads on it. Assume the following:

i. Length of trunk = 0.3H_B
ii. Mass of trunk = 0.36W_B
iii. Mass of head and arms = 0.18W_B
iv. Centre of mass of trunk from distal end = 0.15H_B
v. Point of action of muscle force from the distal end = 0.2H_B
vi. The erector spinae is the only muscle acting on the spine at an orientation at 13° to the spine



If the thoracolumbar spine is inclined at an angle θ = 35°for the first case, the force exerted by erector spinae will be

- 3.6W_B
- 2.09W_B
- 4.5W_B
- 1.4W_B

No, the answer is incorrect.

Score: 0

Accepted Answers:
3.6W_B

9) The person is lifting a load of 0.3W_B with the legs, as in the second case, such that the thoracolumbar spine is now inclined at an angle θ = 75˚. The force exerted by erector spinae will now be **1 point**

- 0.77 W_B
- 1.14 W_B
- 3.21 W_B
- 4.56W_B

No, the answer is incorrect.
Score: 0

Accepted Answers:
1.14 W_B

10) The person is now lifting a load of 0.3W_B, which has been divided into two loads of 0.15W_B each. In this case, the thoracolumbar spine is inclined at an angle, θ = 85˚. The force exerted by erector spinae will be **1 point**

- 1.44 W_B
- 4.56 W_B
- 0.38W_B
- 2.09 W_B

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.38W_B

11) Which of the following conditions is/are the safest for the spine while lifting the load? **1 point**

- [ ] Lifting with a bent back
- [ ] Lifting with an erect back
- [ ] Lifting without handles
- [ ] Dividing the load and lifting with both hands

No, the answer is incorrect.
Score: 0

Accepted Answers:
Lifting with an erect back
Dividing the load and lifting with both hands

12) Which of the following motions can be performed by the shoulder joint? **1 point**

- [ ] Abduction

- [ ] Eversion
- [ ] Internal rotation
- [ ] Adduction

No, the answer is incorrect.
Score: 0

Accepted Answers:
Abduction
Internal rotation
Adduction

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