**11.2 Muscles and movement**

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|  | **Assessment statement** | **Obj** | **Teacher’s notes** |
| 11.2.1 | State the roles of bones, ligaments, | 1 |  |
|  | muscles, tendons and nerves in |  |  |
|  | human movement. |  |  |
| 11.2.2 | Label a diagram of the human elbow joint, including cartilage, | 1 |  |
|  | synovial fluid, joint capsule, named |  |  |
|  | bones and antagonistic muscles |  |  |
|  | (biceps and triceps). |  |  |
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|  | **Assessment statement** | **Obj** | **Teacher’s notes** |
| 11.2.3 | Outline the functions of the structures in the human elbow joint named in 11.2.2. | 2 |  |
| 11.2.4 | Compare the movements of the hip joint and the knee joint. | 3 | **Aim 7:** Video analysis of motion is possible here. |
| 11.2.5 | Describe the structure of striated muscle fibres, including the myofibrils with light and dark bands, mitochondria, the sarcoplasmic reticulum, nuclei and the sarcolemma. | 2 |  |
| 11.2.6 | Draw and label a diagram to show the structure of a sarcomere, including Z lines, actin filaments, myosin filaments with heads, and the resultant light and dark bands. | 1 | No other terms for parts of the sarcomere are expected. |
| 11.2.7 | Explain how skeletal muscle contracts, including the release of calcium ions from the sarcoplasmic reticulum, the formation of cross-bridges, the sliding of actin and myosin filaments, and the use of ATP to break cross-bridges and re-set myosin heads. | 3 | Details of the roles of troponin and tropomyosin are not expected. **Aim 7:** Data logging could be carried out using a grip sensor to study muscle fatigue and muscle strength. |
| 11.2.8 | Analyse electron micrographs to find the state of contraction of muscle fibres. | 3 | Muscle fibres can be fully relaxed, slightly contracted, moderately contracted and fully contracted. |