The aerobic fitness assessment test that would be carried out on the tennis player was squat. This assessment led to the development of valgus in the knee of the tennis player.

**Overhead squat assessment**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Joint | Compensation | Left | Right | Notes |
| Foot/ankle | External rotation | Yes | yes | The femur internally rotates. |
|  | Feet flatten | Yes | yes |  |
|  | Heel raise | Yes | Yes |  |
| knee | Valgus | No | Yes | Caused by elevating structures attached to the lateral femoral condyle |
|  | Varus |  |  | Caused due to the release of tibia insertion of the superficial medial collateral ligament |
| LPHC | Forward lean | No | Yes |  |
|  | Lumbar arching | No | yes |  |
|  | Lumbar rounding | Yes | Yes | Hips moving to flexion |
| Head | Protruding | No | Yes |  |
| Score: left/right | 4/8 |  |  |  |

The assessment was to help gain the client's functional status; thus, it is easier to evaluate the dynamic flexibility. The flexibility test is for the actions in tennis; it can be done for the lower back and hamstring (Kim et al., 2018).

**Determining compensation: anterior view**

**Feet:** the feet flatten and turn out

**Knees:** the knees move inward; this occurred due to the lack of range of motion at the hip and **ankle.** The bone segment distal of the joint is angled outwards during the assessment.

**Compensation: lateral view**

**Limbo**-pelvic hip complex: the lower backaches

The torso leans forward excessively

**Shoulder:** the arms fall forward.

**Overactive muscle**: it is a disruptive neuromuscular recruitment pattern that results in an overactive muscle during a joint action.

The valgus is in the hip abductor muscle.

The knees moving outwards, is a sign of overactive muscle; the muscle that moves for an overactive is the piriformis, gluteus minimus (Martin et al., 2020).

**Underactive muscle**: disruption of neuromuscular recruitment pattern that causes a less active muscle during joint action. The muscle that moves for the underactive is the adductor complex.

The **agility test** is the player's ability to change directions while maintaining balance and control quickly.

The 505 agility test is recommended for a tennis player because it tests the ability of the player to change direction at 90 and 180 degrees. The assessment was conducted for 30 minutes. The tests results are below:

**Assessment**

Test time 30 minutes

Feet / sec: 1.09

Mph: 0.75

M/sec: 0.33

Km/h: 1.2

**The vertical jump** is related to tennis because it helps tennis players develop muscle power useful in speed and powerful hitting. They go hand in hand because the arm swings helps increase vertical jump height, facilitated by great hip muscle work (Watkins et al., 2017).

**Upper body assessment power** is required for tennis players. During the assessment, the following should be evaluated.

**The pelvic tilt**- a strong anterior pelvic tilt is crucial has a visible downward slant to the pelvis.

**Lower back**- the assessment of the overextended lumbar spine; the space between the low back and wall should be observed.

**Thoracic spine**- the mobility of the mid-back can be assessed by standing against the wall. Stiffness in the test and the ability of the client to maintain the mid-back against the wall should be assessed.

Tennis players require **strength** and power, and the endurance to take over five sets.

In tennis, it is the strength that is used to generate endurance speed and power. It is impossible to have strength without power. Strength is crucial to prevent injury.

The **bench press test** can be used to assess strength. The one-repetition maximum test is used to assess the isotonic muscle strength. It measures the amount of weight the client can carry in one repetition. >1.60 is an excellent score, and <0.90 is a poor score.

**1 Rep Max Bench Press Table for adults**

|  |  |
| --- | --- |
| **Rating** | **Score per body weight** |
| Excellent | >1.60 |
| Good | 1.30-1.60 |
| Average | 1.15-1.29 |
| Below average | 1.00-1.14 |
| Poor | 0.91-0.99 |
| Very poor | <0.09 |

**According to the findings, the client has good strength (1.50)**

**Reference**

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Watkins, C. M., Barillas, S. R., Wong, M. A., Archer, D. C., Dobbs, I. J., Lockie, R. G., ... & Brown, L. E. (2017). Determination of vertical jump as a measure of neuromuscular readiness and fatigue. *The Journal of Strength & Conditioning Research*, *31*(12), 3305-3310.