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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Old Sitting – Exercise Description | Name | Type | IMUs Position | Data stream used | Recordings | Algorithm | Platform Integrated | Metrics | Comments |
| 1 | While focusing on a word placed at eye level and arms’ length, turn your head left and right always trying to keeping the target in focus. One minute. | Maintaining Focus -Head rotation | quaternions | Head  Back | Head | Right to Left Normal | OK | OK | * Number of Movements * Pace * Mean Movement Range (average of angular distance) * Standard Deviation Movement Range (variability) * Mean Movement Duration * Standard Deviation Movement Duration * Peak acceleration | Σημάδι ελέγχου με συμπαγές γέμισμα |
| 2 | While focusing on a word placed at eye level and arm’s length, move your head up and down always trying to keeping the target in focus. One minute. | Maintaining Focus -Head up and down | quaternions | Head  Back  Left  Right | Head | Normal  Big Range  Fast | OK | OK | * Number of Movements * Pace * Mean Movement Range (average of angular distance) * Standard Deviation Movement Range (variability) * Mean Movement Duration * Standard Deviation Movement Duration | Σημάδι ελέγχου με συμπαγές γέμισμα |
| 3 | Sitting down with feet firmly on the ground. Bend over as if to pick up an object off the floor. Return to upright and repeat. 5 repetitions | Active Trunk Rotation | quaternions | Head  Back  Right  Left | Back | Normal  Very Low  Eye open  Eye Closed  Fast | OK | OK | * Number of Movements * Pace * Mean Movement Range (average of angular distance) * Standard Deviation Movement Range (variability) * Mean Movement Duration * Standard Deviation Movement Duration * Peak acceleration * Peak Angular Velocity * Movement symmetry?? | Σημάδι ελέγχου με συμπαγές γέμισμα |
|  | **New Sitting – Exercise Description** | **Name** | **Type** | **IMUs Position** | **Data stream used** | **Recordings** | **Algorithm** | **Platform Integrated** | **Metrics** | **Comments** |
| 1 | While seated, move your upper body clockwise in circular motions. Focus on engaging your core muscles and feel free to use your hands for additional support. Start with small circles at a slow speed. | Trunk rotation | quaternions | Head  Back | Back(??) | Right  (Normal, Quick, Slow)  Left  (Normal, Quick, Slow) | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration | Control for extra metrics |
| 2 | Place your unaffected foot underneath your affected foot. Then, use your foot to assist your affected foot up. Then release back down. Perform a total of 15 repetitions for affected leg only. | Assisted toe raises | Linear | Head  Back  Right  Left | Left  Right  Back??? | Fast  Normal  Slow | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration | Control for extra metrics |
| 3 | Point your toes and lift your heels off the ground. Then place your feet back down flat on the floor and repeat. You should feel this in your calf muscles | Heel raises | linear | Left  Right | Left  Right | Normal  Slow  Small Raise | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration | Control for extra metrics |
| 4 | Start by lifting your affected leg up into your chest, and then place it back down onto the floor. Then repeat on the other leg, alternating back and forth. Do a total of 20 to 30 repetitions for each leg. | Seated marching on the spot | linear | Head  Back  Right  Left | Left  Right | Normal  Fast  Slow | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration * Symmetry (differences between mean mean ranges) * Peak Acceleration (highest acceleration achieved during a specific movement) | Σημάδι ελέγχου με συμπαγές γέμισμα |
| 5 | Sit with back straight, head in an upright position with feet hip width apart and placed firmly on the ground. | Sit to stand | linear | Head  Back  Right  Left | Head  Back | Normal  Fast  Slow | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration * Symmetry (differences between mean mean ranges) * Peak Acceleration (highest acceleration achieved during a specific movement) | Control for extra metrics |
|  | **Old Standing – Exercise Description** | **Name** | **Type** | **IMUs Position** | **Data stream used** | **Recordings** | **Algorithm** | **Platform Integrated** | **Metrics** | **Comments** |
| 1 | Stand with feet hwa-fct, eo-ec. Try to maintain your balance in this position for one minute | Maintain Balance HWA/FCT | quaternions | Back  Left  Right | Back? | FCT eye closed  FCT eye open  HWA eye closed  HWA eye open | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration * posture deviation (Degrees of deviation from upright posture) * displacement (Displacement from the center of gravity) * balance loss (Frequency and duration) | Control for extra metrics |
| 3 | Stand with fnwa/fct. Bend over as if to pick up an object off the floor/cupboard. Return to upright and repeat. 5 repetitions | Bending over | quaternions | Back  Left  Right | Back | FCT floor  FCT cupboard  FNWA floor  FNWA cupboard | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration | Σημάδι ελέγχου με συμπαγές γέμισμα |
| 4 | Stand with fnwa. Turn to face the opposite direction. 3 repetitions to the left and 3 repetitions to the right. | Swivel turning | quaternions | Back  Left  Right  Head | Back  Head  ??? | Right to Left  Left to Right  Right and Left | OK | OK | Steps??   * posture deviation (Degrees of deviation from upright posture) * displacement (Displacement from the center of gravity) * balance loss (Frequency and duration) | Σημάδι ελέγχου με συμπαγές γέμισμα |
|  | **New Standing – Exercise Description** | **Name** | **Type** | **IMUs Position** | **Data stream used** | **Recordings** | **Algorithm** | **Platform Integrated** | **Metrics** | **Comments** |
| 1 | Slowly shift your weight to your right foot and lift your left foot slightly off the ground. Hold for up to 30 seconds or as long as you can while maintaining good form. Try to keep tall posture and avoid leaning over. Then return to your starting position. Repeat 5 times on each side. | Lateral weight shifts | Quaternions? | Back  Left  Right | Back?  Left  Right | Left- up  High-up  Very High for both | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration * Symmetry (differences between mean ranges) * Peak Acceleration (highest acceleration achieved during a specific movement) | Metrics maybe different for each imu.  UPDATE METRICS |
| 2 | Sway forward from your ankles just until you feel pressure under your toes and change direction to sway backward just until you feel pressure under your heels. Continue to sway forward and back as above for one minute, twice a day. | limits of stability training anteroposterior direction | quaternions | Back  Left  Right | Back? | Backward  Forward  Forward to Backward | OK | OK | * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration * Peak Acceleration (highest acceleration achieved during a specific movement) | Σημάδι ελέγχου με συμπαγές γέμισμα |
|  | **Old Gait – Exercise Description** | **Name** | **Type** | **IMUs Position** | **Data stream used** | **Recordings** | **Algorithm** | **Platform Integrated** | **Metrics** | **Comments** |
| 1 | Walk across the room moving your head up to look at the ceiling and down to look at the ground. | Walking with Vertical Head Turns | Quaternions  Linear | Head  Back  Right  Left | Head  Right  Left | Head up  Head down  Head up and down | OK | OK | * Steps * Gait cycle * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration * Peak Acceleration (highest acceleration achieved during a specific movement | Για head θέλουμε quaternions (πρέπει να αλλαχθεί η striplist στο κώδικα για τη νέα εφαρμογή) |
|  | **New Gait – Exercise Description** | **Name** | **Type** | **IMUs Position** | **Data stream used** | **Recordings** | **Algorithm** | **Platform Integrated** | * **Metrics** | **Comments** |
| 1 | Stand in front of a wall or counter to hold onto for support. Step to the side with one leg then follow with the other. Repeat 5 steps, then change directions and repeat. Practise for one minute, twice a day. | Sidestepping | Linear | Head  Back  Right  Left | Right  Left | Normal  Big Range | OK | OK | * Gait Cycle * Steps | Update metrics, control to calculate steps with **FFT** |
| 2 | Walk across the room while turning your head as far to the left and right as is comfortable scanning the room as when crossing the road. | Walking with Horizontal Head Turns | Quaternions  Linear | Head  Back  Right  Left | Head  Right  Left  Back?? | Walk  Head right  Head left  Walk and Head Movements | OK | OK | * Gait cycle * Steps * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration * Peak Acceleration (highest acceleration achieved during a specific movement) | Για head θέλουμε quaternions (πρέπει να αλλαχθεί η striplist στο κώδικα για τη νέα εφαρμογή) |
|  | **New Baseline Stretching–Exercise Description** | **Name** | **Type** | **IMUs Position** | **Data stream used** | **Recordings** | **Algorithm** | **Platform Integrated** | * **Metrics** | **Comments** |
| 1 | Cross one ankle over your opposite knee. Gently lean forward until you feel a stretch in the hip and buttock area. The more you lean forward, the more you’ll feel the stretch in your hip. | Hip External Rotator Stretch | Quaternions | Head  Back  Right  Left | Back | LeftLegUp -10 rep (big range)  RightLegUp -10 rep (big range)  RightLegUp -10 rep (small range) | OK | OK | * posture deviation (Degrees of deviation from upright posture) * displacement (Displacement from the center of gravity) * balance loss (Frequency and duration) * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration | Control for extra metrics |
| 2 | While seated, tilt your right shoulder down towards your right hip. Use your hand to reach down the side of the chair. Hold for 5 seconds. Then, return to midline and repeat on the other side. | Lateral Trunk Flexion | Quaternions | Head  Back  Right  Left | Back | 10 right & 10 left  Turn and turn about Right-Left (small range) -10 rep for each side  Turn and turn about Right-Left (big range) -10 rep for each side | OK | OK | * posture deviation (Degrees of deviation from upright posture) * displacement (Displacement from the center of gravity) * balance loss (Frequency and duration) * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration | Control for extra metrics |
| 3 | Keeping the knee straight, step one heel off the ledge and put your weight onto it until you feel a stretch along the back of your leg. Hold for 20 seconds and repeat both sides. | Calf Stretch | Quaternions  Linear | Head  Back  Right  Left | Right  Left  Back | Right leg- 10 rep  Left leg- 10 rep  Right leg- 5 rep -5 sec  Left leg- 5 rep -5 sec | OK | OK | * Steps * Gait cycle * Number of Movements * Pace * Mean Combined Range (yaw) * Standard Deviation Combined Range (variability) * Mean Duration * Standard Deviation Duration * Peak Acceleration (highest acceleration achieved during a specific movement | Για head θέλουμε quaternions (πρέπει να αλλαχθεί η striplist στο κώδικα για τη νέα εφαρμογή) |

\*Exercise 1OldStanding is the same with 2nd (difference is foam)

\*\*Exercise 3NewStanding require camera but I have data with previous version of platform.

\*\*\*Na svisw apo to print ta raw data poy deixnei

\*\*\*\*\*Na tsekarw kai na setarw tous aritmous twn imu me ta positions(head, back, etc)