1. Data obtained from biomechanical application studies.

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| **Paper** | **OptiTrack application** | **Camera type, frequency\* and marker size (M)\*** | **Camera number** | **Data processing software** | **Motion studied** |
| [57] | Validate the estimation of distal arm joint angles from EMG and shoulder orientation | n/a 100 Hz | n/a | Matlab | Shoulder, elbow, forearm angles |
| [84] | Capture the development of axial dyskinesias in mice | Prime 13 120 Hz 4 Hz low pass filter | 4 | Matlab | Movement of mice |
| [51] | Explore speed, aging, and stroke induced changes on sensorimotor control. | n/a 100 Hz | n/a | LabVIEW | Elbow movement |
| [94] | Study the variability of the muscle and tendon properties of children with cerebral palsy | n/a | n/a | n/a | Muscle and tendon excursion |
| [89] | Study the localized skin structural deformation during spine postural changes | n/a | n/a | Matlab | 3D skin stretch deformation |
| [41] | Test the association between loss of ankle dorsiflexion range of movement, and hip adduction and internal rotation during a step down test. | Flex:V100R2 100 Hz | 10 | Matlab | Step down test |
| [58] | Teleoperate an underactuated anthropometric robot hand | Prime 13 n/a | 20 | Matlab | Hand motion |
| [17] | Verify how gait improvement is affected by temporomandibular joint exerciser. | n/a 100 Hz | 10 | n/a | Gait analysis |
| [31] | Study the effect of chronic ankle instability on lower limb kinematics | n/a | 10 | n/a | Gait analysis |
| [42] | Quantify variability in the mechanical technique used by neurologists to elicit the Babinski reflex. | n/a | 10 | 3D Motion Kinematic and Kinetic Analyser, Matlab | Babinski reflex on right leg and foot, and motion of the Babinski hammer |
| [52] | Compare anatomical, functional and regression methods used to estimate the rotation axes of the forearm. | n/a 100 Hz, 5-Hz low pass filtering | 12 | n/a | Rotation of forearm |
| [78] | Propose a specialized optical motion capture system, which causes a minimum obstruction and can support 3D mandibular movement analysis in real-time. | Flex:V100,  100 Hz | 3 | Custom software | Jaw movement |
| [10] | Synthesis of a Watt II six-bar linkage in the design of a hand rehabilitation robot. | Flex 3 n/a | 3 | n/a | Trajectory verification of a hand-rehabilitation robot |
| [43] | Analyse the effects of foot modelling on ankle kinematics and dynamics. | Flex:V100R2 100 Hz | 12 | Matlab | Ankle flexion |
| [82] | Evaluate the impact positive, negative, aroused mood conditions on movement expressivity during a fitness task | S250e 120 Hz | 10 | Matlab | Full body fitness choreography |
| [67] | Validate inertial sensors for postural change measurements. | n/a | n/a | Matlab | Inertial sensor motion |
| [32] | Study the effect of cerebral palsy on the morphology and composition of lower limb muscles | n/a | n/a | n/a | Gait analysis |
| [33] | Investigate gait kinematics alteration when participants perform a texting task / negotiation on mobile devices during step | n/a 240 Hz | 8 | Matlab | Gait analysis |
| [64] | Measure orientation and length changes of muscle fascicles and aponeuroses in gastrocnemius muscles. | Flex:V100R2 100 Hz, 1-Hz low pass filtering M: 11 mm | 9 | Matlab | Motion and position of ultrasound imaging device |
| [34] | Investigate how stroke influences the navigational component of spatially oriented locomotion. | n/a 120 Hz 6.25 Hz low pass filter | 15 | n/a | Gait analysis |
| [53] | Analyse balance invariance in the co-activation of agonist and antagonist muscle pairs. | n/a | 8 | n/a | Upper limb joint positions |
| [85,86] | Study the effect of lean and reach object transportation tasks on stability | n/a 100 Hz 6 Hz low pass filter | n/a | Visual3D | Lean to reach and functional reach tests |
| [19] | Analyse the effect of footwear and foot orthoses on transverse plane knee motion during running. | n/a 100 Hz 7-Hz low pass filter | 12 | Visual3D | Knee kinematics during jogging type gait |
| [79,95] | Introduce and validate a curved muscle model of the lumbar spine | Flex 3 100 Hz | 24 | Custom software | Concentric and eccentric lumbar exertions |
| [48,49] | Study the achilles tendon moment in children with cerebral palsy | n/a 120 Hz M: 11 mm | n/a | Matlab | Lower limb movement |
| [59] | Evaluate how physical demands and task performance of a tap gesture on a computer touchscreen vary between target locations and display positions | n/a 100 Hz | n/a | n/a | Hand movement |
| [20] | Validate the control system of powered knee and ankle prostheses. | n/a | n/a | Matlab | Gait analysis |
| [81] | Describe the development of an index to assess coactivity for the lumbar spine and test its ability to differentiate between various complex dynamic tasks | Flex 3 n/a | 24 | n/a | Torso movement during lifting and pushing tasks |
| [72] | Evaluate the effect of seated, standing and perching workstations on spinal load and discomfort. | n/a | 24 | n/a | Postural transitions in static tasks |
| [88] | Identify the reliability of forward head posture evaluation | n/a 150 Hz | 16 | n/a | Head, neck and shoulder movement during sitting, standing, walking and running |
| [96] | Study the activity of scapular muscles during shoulder back and forth movement phases. | n/a | 1 | n/a | Track the start and end of a shoulder exercise |
| [54] | Analyse hand functions after tendon transfer surgery. | n/a 30 Hz | 5 | n/a | Finger movements on cadaver |
| [21] | Evaluate the effects of a therapeutic foot exercise program on injury incidence. | Flex:V100 n/a M: 10 mm | 9 | Visual3D | Gait analysis and running kinematics |
| [35] | Study the balancing responses to lateral perturbations during slow walking | n/a | n/a | n/a | Gait analysis |
| [22] | Assess knee cartilage stress distribution and deformation. | n/a | 6 | n/a | Gait analysis |
| [23] | Validate a gait-monitoring system specified for Parkinson’s disease. | n/a | n/a | n/a | Gait analysis |
| [24] | Introduce a lower limb exoskeleton that implements real-time gait-phase detection and active cancellation of passive dynamics. | n/a | 12 | n/a | Gait analysis |
| [25] | Compare gait changes (trunk deflection) after total knee arthroplasty with two different approaches. | n/a | 6 | Matlab | Gait analysis |
| [6] | Kinematic analysis of a posterior cruciate retaining mobile-bearing total knee arthroplasty. | n/a | n/a | n/a | Relative orientation of femur and tibia of a cadaver |
| [55] | Study the relationship between inter-handle distances and upper limb exertion during the simple pushing and pulling of a four-caster cart. | Flex:V100 100 Hz | 14 | n/a | Upper limb exertions |
| [36] | Investigated how healthy subjects adapt their locomotion patterns to accommodate walking along a gently curved trajectory | Flex 13 120 Hz | 6 or 8 | GaitSym, Matlab | Gait analysis |
| [65] | Determine the intra-session reliability of a novel 3D ultrasound imaging method and examine muscle and aponeurosis strains during isometric contractions. | n/a 120 Hz M. 9.5 mm | 4 | Matlab for 3D mesh building | Track the motion of the ultrasonic transducer |
| [50] | Quantify muscle co-contraction | n/a 120 Hz | 4 | Matlab | Lower limb joint angles |
| [44] | Determine how cartilage mineralization affects joint degeneration in rats. | Flex 13 120 Hz | 3 | Matlab | Motion of a swinging pendulum fitted to the tibia |
| [83] | Verify discriminative properties of bradykinesia and compare to motion captured finger tapping. | V120 n/a | Two integrated cameras | Matlab | Finger movement |
| [18,40] | Study the effects of combined strengthening, stretching and functional training for diabetic neuropathy | Flex:V100 n/a M: 20 mm | 6 | Visual3D | Gait analysis |
| [90] | Validate the measurements of an inertial sensor on lower limb injury rehabilitation | n/a | 12 | Matlab | Static stretching tasks |
| [26] | Demonstrate the biomechanical abilities of a powered prosthesis compared to a passive prosthesis. | S250e 120 Hz | 12 | Matlab | Gait analysis |
| [27] | Investigate muscle fibre conduction velocity in different gait phases of early and late-stage diabetic neuropathy. | Flex:V100 100 Hz M: 20 mm | 6 | Visual3D | Gait analysis |
| [66] | Validate inertial sensor-based offline foot motion smoothing with motion capture. | Flex 13 n/a | 6 | Matlab | Foot position |
| [45] | Examine the effect of total knee arthroplasty on patellar kinematics and patellofemoral pressure. | n/a 120 Hz | 5 | n/a | Knee kinematics on cadaver |
| [28–30] | Study the effect of minimalist footwear on gait biomechanics of elderly woman with knee osteoarthritis. | Flex:V100 n/a M: 20 mm | 6 | Visual 3D in each and Matlab only in the 2012 paper | Gait analysis |
| [68] | Study how the perception of ground surface compliance is altered by plantar vibration feedback. | Flex:V100R2 n/a | n/a | n/a | Track the displacement of the vibrating plate. |
| [37] | Validate an inertial sensor based gait analysis system | Flex13 n/a | 6 | n/a | Gait analysis |
| [9] | Evaluate Kinect’s accuracy with motion capture system for stroke rehabilitation. | Flex:V100R2 n/a | 8 | Matlab | Shoulder, elbow and wrist coordinates |
| [87] | Study the effect of different seating conditions during typing | n/a 100 Hz 10 Hz low pass filter | 24 | n/a | Neck, shoulder and hip angles |
| [73] | Investigate the effect of different kneepad designs on knee joint forces during kneeling. | n/a | 18 | n/a | Verify position and mark events during measurement tasks |
| [46] | Analyse the relationship between knee joint motion and centre of mass motion during stationary standing. | Flex:V100R2 100 Hz 1.5 Hz low pass filter M: 11 mm | 6 | n/a | Ankle, knee and hip angles during stance |
| [47] | Examine the effect of strike forms during cutting on knee joint angle and muscle activities. | Flex:V100R2 100 Hz M: 14 mm | 6 | n/a | Knee and lower leg angles during cutting |
| [74,97] | Biomechanical analysis of posterior longitudinal ligament in cervical disc replacement. | n/a | n/a | n/a | Motions of cadaveric cervical spines |
| [91] | Compare lower extremity control strategies during the turn initiation phase of pirouettes performed with and without hip external rotation | n/a | 16 | Matlab | Pirouette turns |
| [75] | Explore different biomechanical responses of low back in postural conditions of prolonged stooping. | n/a 100 Hz | n/a | n/a | Trunk flexion, lumbar flexion and pelvic rotation angles |
| [56] | Validate a method using Kinect v2 sensor to measure shoulder and arm motion range | Prime 41 120 Hz M: 8mm | 6 | Matlab | Upper extremity motions. |
| [60] | Measure the reaction time of hand movements mimicking a motion on a computer screen | n/a 120 Hz | n/a | n/a | Movement of a handheld marker cluster |
| [69] | Validate wearable sheet stretch sensors in tri-axial lumbar motions | n/a M: 11 mm | 8 | n/a | Lumbar motion angles |
| [61] | Measure hand movement during virtual daily living test | n/a | 8 | n/a | Hand movement |
| [38] | Study the effect of Nanba walk on the knee adduction moment | n/a 100 Hz  M: 7 mm | 10 | Venus 3D | Gait analysis |
| [70] | Measure the shoulder motion of Anorexia Nervosa patients while passing through a door-like opening. | V100:R1 100 Hz | 4 | Matlab | Shoulder rotation |
| [39] | Measure kinetic and kinematic differences between different foot strike patterns during running. | V100 100 Hz | 8 | Matlab | Gait analysis |
| [62] | Study the association between speech sounds and hand movements | Prime13 120 Hz M: 15 mm | 3 | n/a | Hand movement |
| [63] | Studied whether expressive body movements, which are systematically paired with music, can modulate children’s perception of musical expressiveness. | n/a 100 Hz | 12 | n/a | Movement of chest and dominant hand |
| [71] | Study the upright standing attitude of healthy young adults. | n/a 120 Hz | n/a | Custom software commercialized by the authors: ASAP 3D Skeleton Model | Posture, spine morphology and pelvis parameters during standing |
| [76] | Study the postural stability during gaze shift in healthy adults | n/a 100 Hz | 7 | n/a | Head position |
| [77] | Studies the effect of different sound stimuli on body motions. | Prime 41 180 Hz | 17 | Custom software | Head position |

\*indicated if reported in the paper