

جامعة أم القرى
UMM AL-QURA UNIVERSITY



Umm Al-Qura University
College of Applied Medical Science
Physiotherapy Department

Laboratories Handbook



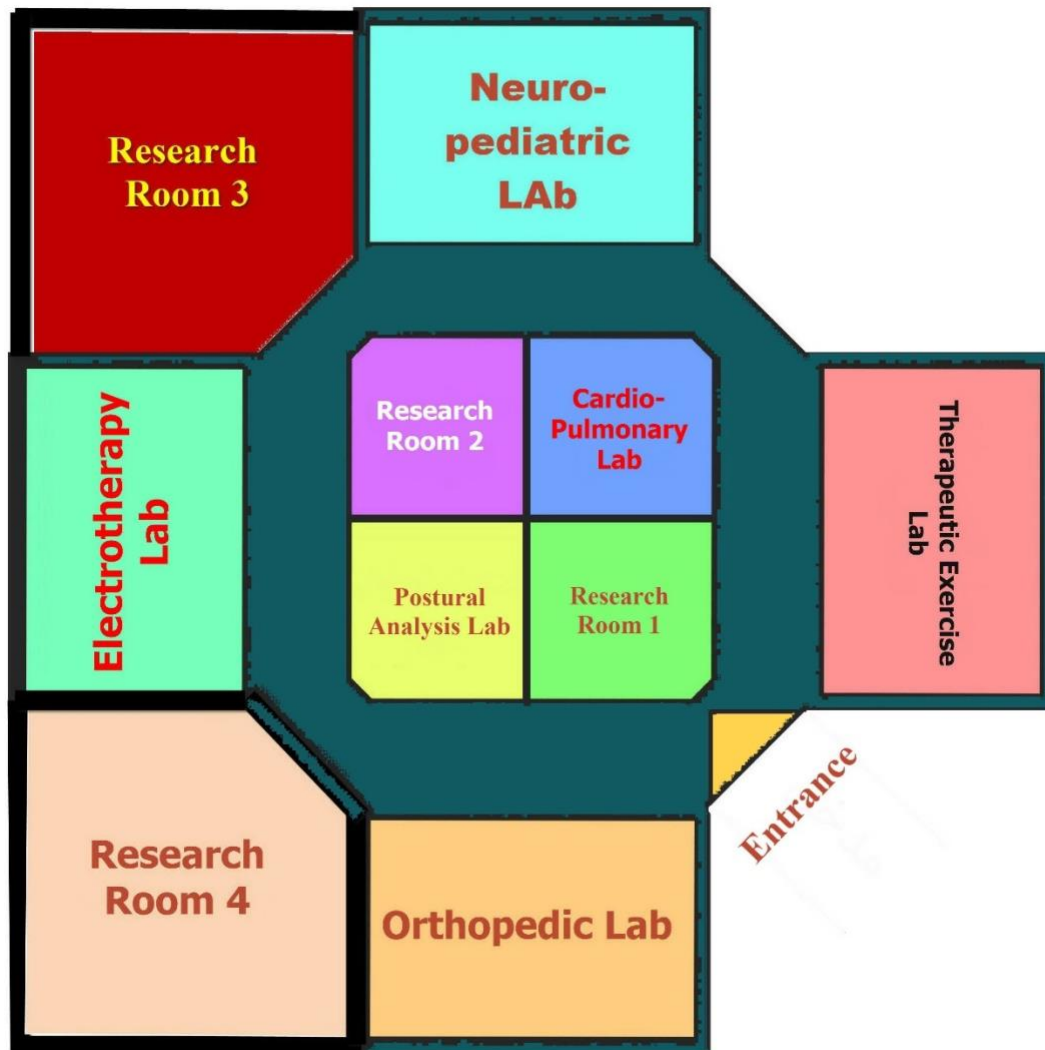
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Lab Map



Department of Physical Therapy Mission

The mission of the department of physical therapy is “Providing high-quality education in physical therapy to prepare qualified physical therapists to work in various practice settings, and to contribute to scientific research and innovation, and to excel in community service and volunteer work”

Physical Therapy Program Mission and Goals

The mission of the physical therapy program is “Providing high quality evidence-based education and scientific research, guided by core Islamic values, for preparing skilled and competitive physical therapists to deliver distinguished rehabilitation services for individuals with disabilities and health conditions”

The goals of the physical therapy program are:

- 1- Providing a high-quality education and evidence-based practice in physical therapy
- 2- Contributing to improvement of physical therapy profession through student activities and program faculty member's scientific research
- 3- Preparing physical therapist who are able to integrate their knowledge and skills to contribute to the healthcare needs of the society
- 4- Preparing physical therapist who demonstrate Islamic values, professional ethics and able to take leadership roles in the physical therapy profession.

Laboratories Plan

The Lab committee seeks to achieve the department mission through improvement and development of the department to become an academic and research center serving students and contributing to the improvement of the scientific research process through:

- 1- Improving the available labs serving the scientific research process by following up equipment in the main teaching labs and keeping its maintenance within:
 - The Electrotherapy Lab
 - The Therapeutic Exercises Lab
 - The neurology Lab
 - The Orthopedics lab
- 2- Lab Development through adding equipment serving the educational process aiming to cope with technical advancement in addition to updating the software of the current equipment, raising its efficacy, and providing periodic maintenance as in:
 - Cardiopulmonary Evaluation Lab
 - EMG Lab
 - Pulmonary function Lab
 - Physical Performance Lab.
 - Postural analysis
 - Motion analysis Lab.
- 3- Adding several recent labs that would serve student research in their graduation projects.
- 4- Introducing new labs for new fields that could provide accurate evaluation as well as effective treatment as in:
 - Osteoporosis Lab
 - Occupational Therapy Lab
- 5- Achieving the goals of scientific research through the funded research projects granted from Institute of Scientific Research and reviving the heritage of Islamic Sciences, King Abdul Aziz city for science and technology as well as other funding sources in the university.

Lab safety Guidelines

A. General Laboratory Safety Rules

1. Personal Safety

- ✓ Be familiar with the electrical and fire hazards associated with your workplace.
- ✓ Be as careful about the safety of others as for yourself. Think before you act.
- ✓ Be tidy and systematic.
- ✓ Avoid bulky, loose clothes. Avoid long loose hair.
- ✓ It is Not allowed to join practical classes without the scrub or lab coat
- ✓ No one is allowed to enter in the lab area bare foot due to increased risk of electric shock.
- ✓ Remove metal bracelets, rings or watchstraps when working in the laboratories.
- ✓ Avoid working with wet hands and clothing.

2. Food, beverages coffee teacup, and Smoking

- ✓ Due to the increased risk of electric shock, no drinking of beverages, consumption, or storage of any kind of food is allowed in labs.
- ✓ Smoking is prohibited in all laboratories in all timings.

3. Laboratory Operating Hours

- ✓ Students are never allowed to work alone in any lab area other than scheduled laboratory
- ✓ operating hours unless either a Lab T/A or Course Instructor is present inside that lab area.
- ✓ The laboratory operating hours for students are posted on the entrance doorway and on the notice board of computer engineering department.

4. Power Supply and electrical Safety

- ✓ The meeting of water with electricity is very dangerous, so you must be careful when using an electrical device that there is no water next to it
- ✓ Do not touch any electrical switches or electrical appliances with wet hands or standing on a wet surface.
- ✓ Only use electrical equipment and connections that are in good condition and manufactured by reputable companies.
- ✓ Be sure to know the operating instructions of each electrical appliance before use

- ✓ Do not touch or hold any electrical equipment with one hand while you are touching any surface that may be electrically conductive
- ✓ No electric socket should be overloaded. Whenever heating is observed in the switches or electrical connections, the competent electrician should be informed of the necessary work. No electrical connections or repairs should be carried out without the knowledge of specialists in the field of electricity.
- ✓ Disconnect all unused electrical devices and unplug electrical devices in laboratories upon completion of their use
- ✓ Keep electrical connections away from walking and walking places and avoid passing electrical wires under heavy appliances or beds
- ✓ Students and workers inside laboratories must be made aware of safety issues to prevent the dangers of electricity and not to touch electrical devices while touching patients or surrounding metal devices.
- ✓ Ensure that lights and electrical appliances that generate heat, such as infrared lamps, are far from objects such as curtains and newspapers.
- ✓ The electrical appliances must be maintained regularly, and when any damage is discovered, the broken electrical sockets and switches must be replaced immediately.
- ✓ Electricity must be cut off to all laboratories in the event of evacuation, after working hours, and when leaving laboratories for a long period of time, such as during summer vacations and festive holidays.
- ✓ Voltages above 50-VAC or 120-VDC are always dangerous.
- ✓ Extra precautions should be considered as voltage levels are increased.

5. Laboratory Equipment

- ✓ Lab equipment may not be removed from the Computer Engineering lab areas without the permission of the Laboratory Supervisors.
- ✓ Laboratory bench equipment (except for some lab equipment) must be turned off before closing the lab area for the day.
- ✓ Never open (remove cover) of any equipment in the laboratories.
- ✓ Laboratories shall be locked when unoccupied.

6. Waste Management Safety

- ✓ Know the correct handling, storage and disposal procedures for batteries, cell, used blankets or used towels.
- ✓ Wastes should be placed in the appropriate place in the trash can.

B. Electrical and Fire Emergency Responses

1. Police, Fire or Medical Emergency

- ✓ Use the telephone located in the laboratory area and press 0-996 to notify police, fire, and ambulance for emergency help.
- ✓ Everyone present in the laboratory area shall be familiar with the locations and operation of safety and emergency equipment, including but not limited to, fire extinguishers, first aid kits emergency power off system, fire alarm pull stations, and emergency telephones.

2. Electric Shock

- ✓ When someone suffers serious electrical shock, he may be knocked unconscious.
- ✓ If the victim is still in contact with electrical current, immediately turn off the electrical power source.
- ✓ If you cannot disconnect the power source, depress the Emergency Power Off switch.
- ✓ Do not touch a victim that is still in contact with a live power source; you could be electrocuted! Have someone call for emergency medical assistance immediately. Administer first-aid, as appropriate.

3. Electrical Fire

- ✓ If an electrical fire occurs, try to disconnect the electrical power source, if possible.
- ✓ If the fire is small and you are not in immediate danger; and if you have been properly trained
- ✓ in fighting fires, use the correct type of fire extinguisher to extinguish the fire.
- ✓ When in doubt, push in the Emergency Power Off button.
- ✓ NEVER use water to extinguish an electrical fire.

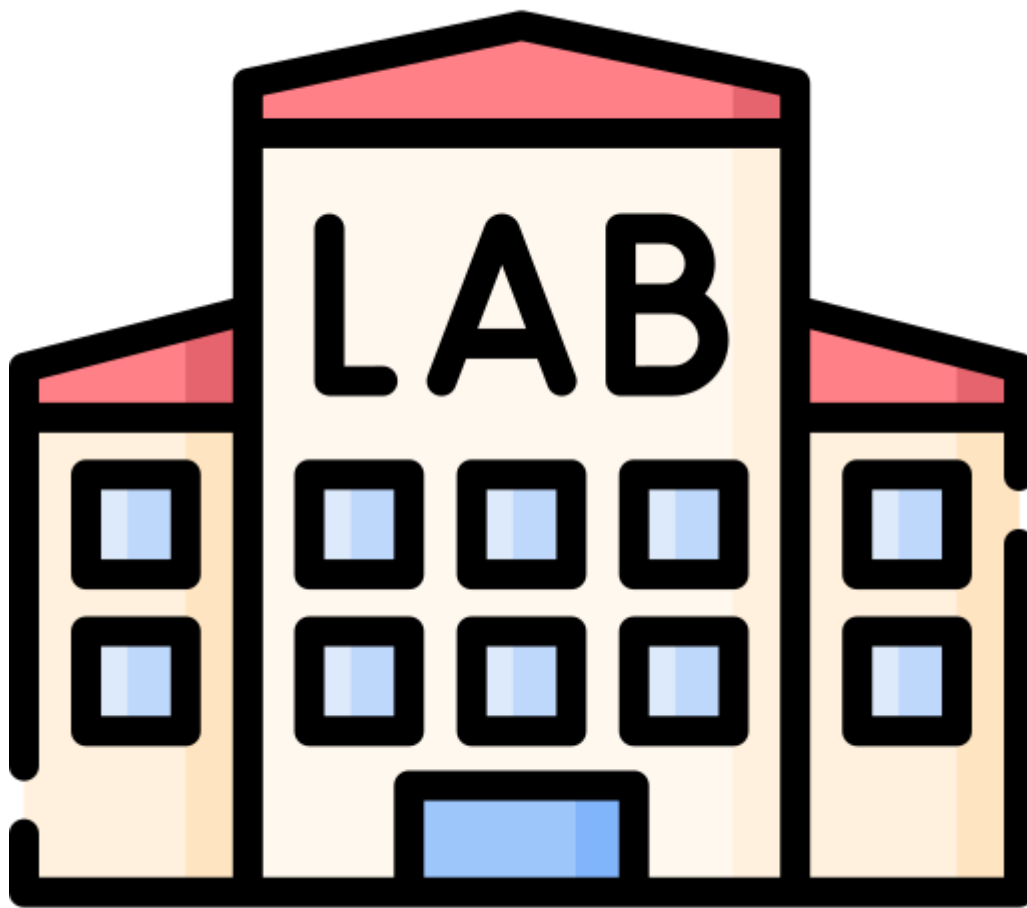
4. Emergency Power Off

- ✓ Every lab is equipped with an Emergency Power off System.
- ✓ When this switch is depressed, electrical power to the lab will shut off, except for lights.
- ✓ Only authorized personnel are permitted to reset power once the Emergency Power Off system has been engaged.

5. Building Evacuation in Emergency

- ✓ Everyone present in the laboratory should be familiar to emergency exits & way out plans.
- ✓ Use the nearest exit doorway from lab area closest to the stairwell to exit the building.
- ✓ Follow the Emergency Exit Signs posted in the hallways. Do not use elevators.
- ✓ Lab Teaching Assistants (T/As) or Instructor shall make sure all persons are out of the
- ✓ laboratory area and follow the directions posted at each doorway to the laboratory area.

The above general laboratory safety rules are designed to safeguard you and your co-workers, fellow students and colleagues and are a minimum requirement for individuals working in the laboratories at Umm Al-Qura University, Makkah. Specialized training and rules may apply depending on type and scope of activities involved.



Labs General Facility

Labs and Classrooms Facilities																						
Construction and Tools															Safety							
Number of Windows	Doors	Type of Ground	Chairs	Couches	Board	Light Box	Electrical Plugs	garbage Basket	Air conditions	Computers	Data show	MIC	Photocopier	Network Connector	Extinguisher	Fire alarm	Emergency Exit	Extractor fan	Guidance Labels	Electrical Generator	Gel alcohol	
Class rooms																						
Classroom 1	0	2	Moquette	50	0	1	15	6	1	2	1	1	1	0	yes	1	yes	yes	0	1	0	0
Classroom 2	0	2	Moquette	30	0	1	9	5	1	2	1	1	1	0	yes	1	yes	yes	0	1	0	0
Classroom 3	0	2	Moquette	50	0	1	15	6	1	2	1	1	1	0	yes	1	yes	yes	0	1	0	0
Educational labs																						
Therapeutic Exercises Lab	0	2	Moquette	20	6	1	15	19	1	4	0	1	1	0	yes	2	yes	yes	2	1	0	1
Electrotherapy Lab	0	2	Moquette	20	11	1	15	19	1	4	0	1	1	0	yes	2	yes	yes	2	1	0	1
Neuro-pediatric Lab	0	2	Moquette	20	4	1	15	19	1	4	0	1	1	0	yes	2	yes	yes	2	1	0	1
Orthopedic Lab	0	2	Moquette	20	8	1	15	19	1	4	0	1	1	0	yes	2	yes	yes	2	1	0	1
Research Labs																						
Cardio-Pulmonary lab	1	1	Moquette	2	0	0	2	4	1	1	0	0	0	0	yes	1	yes	No	0	1	0	0
Postural analysis Lab	1	1	Moquette	1	0	0	2	4	1	1	0	0	0	0	yes	1	yes	yes	0	1	0	0
Electromyography Lab	1	1	Moquette	3	1	0	15	4	1	1	0	0	0	0	yes	1	yes	yes	0	1	0	0
Motion analysis Lab	0	2	Moquette	5	1	0	15	8	1	2	0	0	0	0	yes	1	yes	yes	0	1	0	0
Physical Performance Labs	0	2	Moquette	5	1	0	15	8	1	2	0	0	0	0	yes	1	yes	yes	0	1	0	0
Research room 1 (Sports lab)	1	1	Moquette	2	0	0	4	4	1	1	0	0	0	0	yes	1	yes	yes	0	1	0	0

Therapeutic Exercises Lab

Lab General Information

Therapeutic Exercise lab is a student lab that designed to receive students for teaching purposes. The total area of this lab is 100 m² with the maximum capacity for this lab is 25 students. It has 25 chairs and 8 plinths for practical teaching purposes. Also, it has equipment used for exercising the upper limb, lower limb, and postural muscles. Therapeutic exercise lab trains the student to use the equipment used in rehabilitation of patients ranging in age, from pediatric to geriatric and assist patients in their recovery from injury, physical illness, or inactivity.

Lab activity

- Multi-purpose resisted exercise Units.
- Continuous passive movement device.
- Exercise therapy for local and general body endurance.
- Rehabilitation of post-traumatic conditions and sports injuries.
- Rehabilitation of spine by traction and special Multi-Angle Benches.

Plan for development:

The lab has a development plan to request both an evaluator and therapeutic tools used in both teaching and rehabilitation as well as for research purposes like:

- The eccetron device for eccentric muscle contraction.
- Anti-Gravity Treadmill.
- Manual Therapy tables.
- Evaluator (computerized muscle assessment tool).
- Pressure algometer



Lab Facility



Hand dynamometer

Evaluation of hand grip strength



Total Body fitness

Strengthening exercises for upper and lower limb muscles



Back range of motion device

for measuring the ROM of the back



Cervical ROM device



Total Gym 26000 Bilateral Leg Press



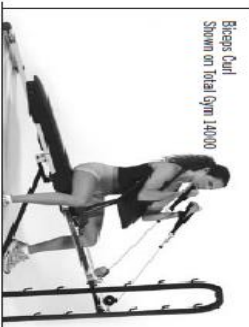
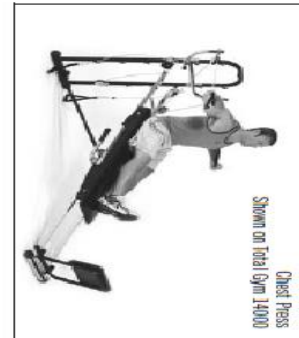
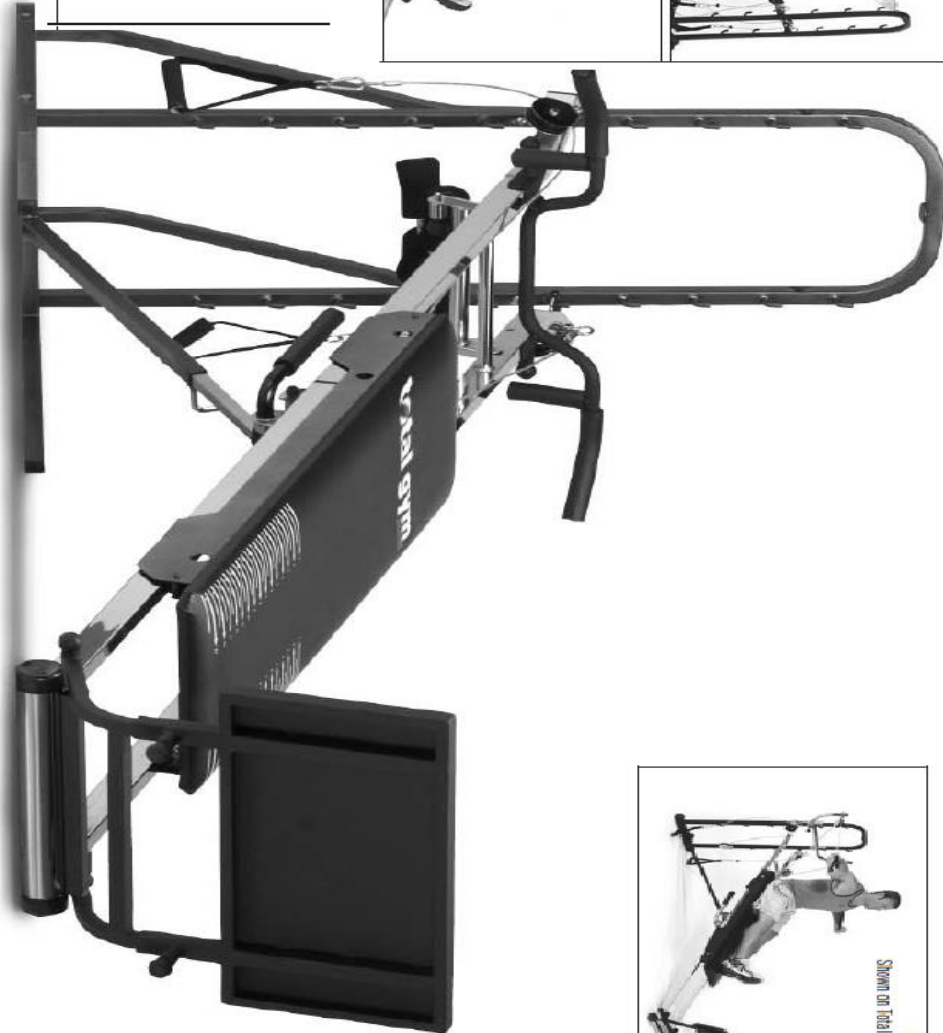
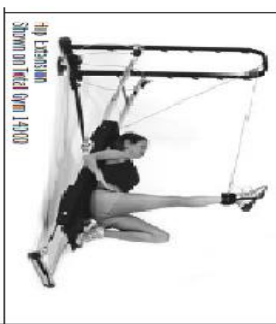
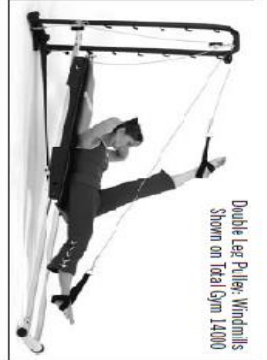
Treadmill STARTRAC

10 Tips for Avoiding Injuries during Exercises

1. Take five to 10 minutes to warm up and cool down properly.
2. Plan to start slowly and boost your activity level gradually unless you are already exercising frequently and vigorously.
3. Be aware that training too hard or too often can cause overuse injuries. A mix of different kinds of activities and sufficient rest is safer.
4. Listen to your body. Hold off on exercise when you're sick or feeling very fatigued.
5. If you stop exercising for a while, drop back to a lower level of exercise initially.
6. For most people, simply drinking plenty of water is sufficient.
7. Choose clothes and shoes designed for your type of exercise. Replace shoes every six months as cushioning wears out.
8. For strength training, good form is essential. Initially use no weight, or very light weights, when learning the exercises. Never sacrifice good form by hurrying to finish reps or sets or struggling to lift heavier weights.
9. Exercising vigorously in hot, humid conditions can lead to serious overheating and dehydration. Slow your pace when the temperature rises above 70°F. On days when the thermometer is expected to reach 80°F, exercise during cooler morning or evening hours or at an air-conditioned gym. Watch for signs of overheating, such as headache, dizziness, nausea, faintness, cramps, or palpitations.
10. Dress properly for cold-weather workouts to avoid hypothermia. Depending on the temperature, wear layers you can peel off as you warm up. Don't forget gloves.



LABS MANUAL



Neuro-pediatric Lab

Lab general information:

A neurological and pediatric rehabilitation lab is the second teaching lab in the physical therapy department. It has large area of 100 m² and with a maximum student capacity of 25 students. It has a wide base Bobath plinths and stair and parallel bars. Also, it includes therapeutic tools like the wedges, rolls medicine balls used for teaching the student how to use it in pediatric rehabilitation. The neuropediatric lab assists in the evaluation and treatment of individuals with movement problems due to disease or injury of the nervous system. A neurologic rehabilitation lab helps improve or restore the mobility you need to move forward with your life using a variety of treatment techniques that help you move better, restore function, and prevent disability associated with a variety of neurological conditions.

Lab activity

Neuromuscular rehabilitation

- Hemiplegia
- Paraplegia
- Quadriplegia
- Peripheral nerve injuries
- Parkinsonism
- Myopathies

Pediatric Rehabilitation

- Cerebral Palsy
- Spina bifida
- Brachial Plexus Injuries.
- Muscular Dystrophy.
- Genetic Physical Problems
- Congenital Anomalies

Plan for development

- ✓ Lokomat Therapy
- ✓ Neofect Smart Glove.
- ✓ RT300-SL Functional Electrical Stimulation Bike (FES Bike).
- ✓ NuStep Recumbent Cross Trainer.

Neurological Handicapped Patients

1. Patient must be present with therapist.
2. Keep attention from fall risk during varying assessment in lab.
3. Wash hand before and after deal with patient for your safety and patient safety.
4. Lab coat must be wearied in lab and use mask and gloves.
5. Exit ways and corridors must be clear and easy reachable.
6. Warning sign must be present in obvious place in lab and easy to be applied
7. Arrangement must be advised to students during lab entry



Lab Facility



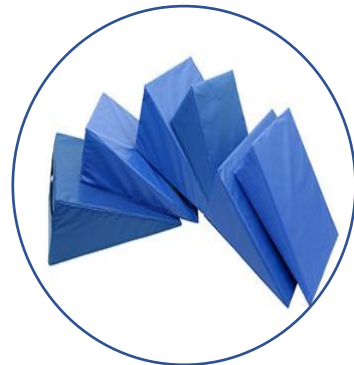
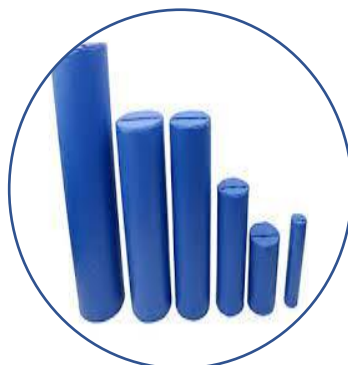
ArmeoSpring Therapy Rehabilitation of the upper limb



Tilting table height-adjustable verticalization table



Biodex balance system Assessment and balance training



Tools for pediatric rehabilitation

Electrotherapy Lab

Lab General Information

Electrotherapy lab is a student lab that designed to receive students for teaching purposes. The total area of this lab is 100 m² with the maximum capacity for this lab is 25 students. It has 25 chairs and 8 plinths for practical teaching purposes. Also, it has electrical equipment used for stimulating muscles as well as inhibiting pain sensation.

Electrotherapy lab trains the student to use the equipment used in rehabilitation of patients ranging in age, from pediatric to geriatric and assist patients in their recovery from injury, physical illness, or inactivity. Electrotherapy lab is well equipped with equipments of LASER, Ultrasonic therapy, interferential therapy, neuro, muscular, electrical Stimulator etc., Practicing in the labs gives excellent opportunity for the students to sharpen their clinical acumen by 'hands on' exposure under guidance of experienced faculty.

Lab activity

- ✓ Electro-diagnostic and EMG evaluation.
- ✓ Electrical Stimulation of muscle and nerves.
- ✓ Pain relieving modalities.
- ✓ Low and medium frequencies electrical currents.
- ✓ Hydrotherapy equipments
- ✓ Superficial and deep thermal modalities.
- ✓ Cryotherapy.
- ✓ Magnetic therapy.
- ✓ Electrical stimulation for tissue repair.
- ✓ High- and low-level laser therapy.
- ✓ Shock wave therapy.
- ✓ EMG bio-feed back

Plan for development

The lab has a development plan to request therapeutic modalities used in teaching, rehabilitation as well as for research purposes like:

- ✓ Capacitive resistive radiofrequency therapy.
- ✓ Microcurrent electrical nerve stimulation.
- ✓ Functional Electrical stimulation.



Lab facility

Thermal Modalities



Hydrocollator



Infra-red radiation



Shortwave diathermy

Electrotherapy



BTL Electrical Stimulation device



Phyaction guidance



Combi 400

Laser Therapy



High intensity laser therapy



BTL laser therapy



LASERSIX 15 W laser



Therapeutic Ultrasound



Radial Shockwave therapy



Hydrotherapy Whirlpool Sports Baths

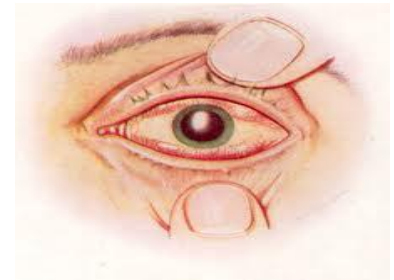
Risks of Electrotherapy equipment



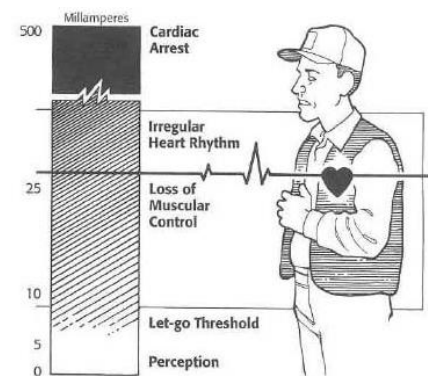
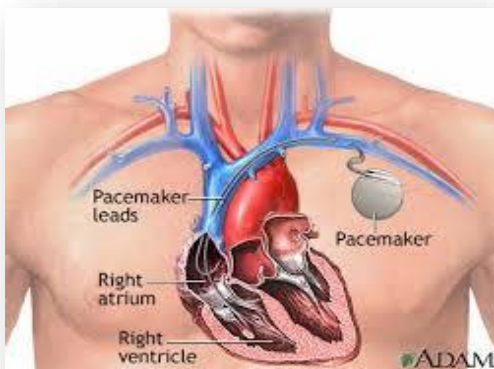
Electrical Shock



Heat Burn



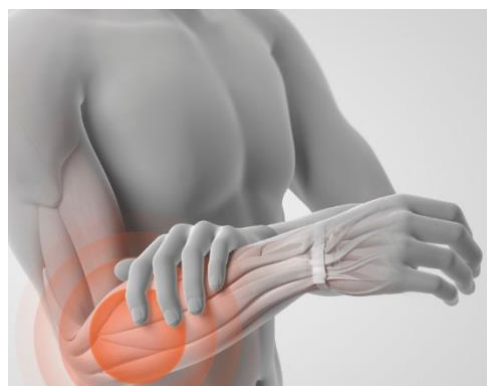
Eye irritation



Cardiac arrhythmia in patients with pacemakers.



Chemical burn



Pain

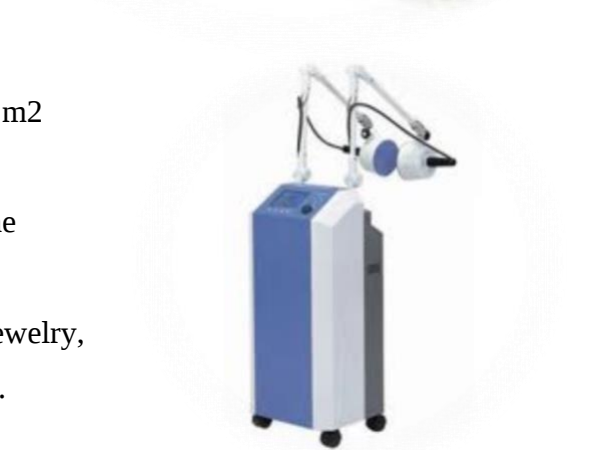
Safety precautions of laser application

- ✓ NEVER point a laser in someone's eyes
- ✓ Before turning on the laser pointer, always be SURE that it is pointed away from yourself and others.
- ✓ NEVER look directly into a laser pointer.
- ✓ NEVER direct a laser pointer at another person.
- ✓ FOLLOW the same rules for direct reflections of laser light from reflective surfaces.
- ✓ All persons in the laser room should WEAR the laser goggles.
- ✓ ENSURE that the laser beam is perpendicular to the treatment area all time during the treatment.



Safety precautions of Magnetic Therapy application

- ✓ CHECK for all connections.
- ✓ CHECK the connections of the machine and electrodes.
- ✓ NEVER to use connections or wires of the apparatus or electrodes with any damage or abrasions.
- ✓ ENSURE that the apparatus is earthed.
- ✓ ENSURE that there is no other source of electromagnetic devices at a range of 3 m2 (EMG, SWD).
- ✓ ENSURE that there is no metals near to the apparatus.
- ✓ ENSURE that the patient has no metals, jewelry, or have cardiac arrhythmias or pacemaker.



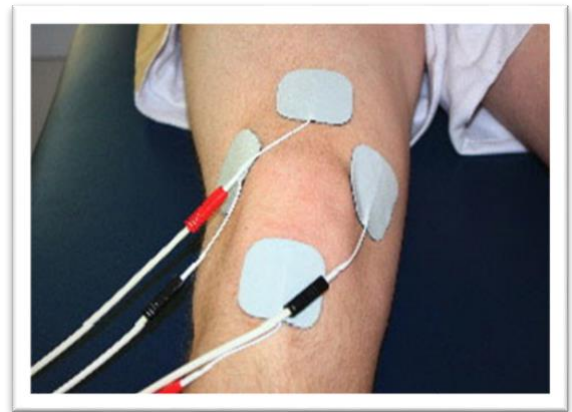
Safety Precaution and Guidelines for Short Wave Diathermy Application

- ✓ ENSURE that there is no metal or moisture wither the area to be treated for example hairpins or jewelry.
- ✓ If using space plates, Adjust the position of the electrodes within the covers.
- ✓ TEST that the machine is operating by placing your hand between the electrodes resonate the machine and feeling the heat produced.
- ✓ INSTRUCT the patient not to move to avoid touching any part of the machine.
- ✓ DO NOT touch or allow the patient to touch the machine if you are earthen.
- ✓ WARN the patient that he should feel a mild comfortable, warmth and not more, or a bum cold result.
- ✓ CHECK that the machine controls are at zero
- ✓ SWITCH the intensity control to the standby position
- ✓ CHECK that the machine controls are at zero
- ✓ SWITCH the intensity control to the standby position
- ✓ NEVER resonate the machine on higher setting and ask the patient to describe any sensation of warmth felt.
- ✓ ENSURE that the skin is dry
- ✓ NEVER apply short wave over clothing.
- ✓ CARE must be taken if short wave is to be given over bony prominence
- ✓ TURN on the timer to the required treatment time as short-wave diathermy cannot be produced unless the timer is switch on.



Safety Precautions for Electrotherapy application

- ✓ CHECK the connections of the machine and electrodes.
- ✓ NEVER to use connections or wires of the apparatus or electrodes with any damage or abrasions.
- ✓ CHECK that the device is earthed
- ✓ ENSURE that all buttons are at zero before application.
- ✓ NEVER to increase intensity of the device before ensuring the electrodes are securely in their places.



Safety Precaution and Guidelines for Ultrasound Application

- ✓ TEST the apparatus and the head while operating by putting small amount of water over the head and observe the presence of small bubbles exists from the head.
- ✓ CHECK for all connections. ENSURE that the coaxial cable is completely intact with no abrasions or cuts.
- ✓ ENSURE that the apparatus is earthed.
- ✓ APPLY enough conduction gel first to the target area.
- ✓ USE the sound head to evenly distribute the gel.
- ✓ SET the timer to the appropriate treatment duration.
- ✓ TURN the Ultrasound unit ON by increasing the intensity to the required level (W/cm²).
- ✓ ENSURE that the head is continuously moved during the application.
- ✓ KEEP your hand out of the water when using underwater technique.
- ✓ After the termination of the treatment duration, remove the remaining gel from the patient's skin and the ultrasound head.



Orthopedic Lab

Lab General Information

The Orthopedic lab is a student lab that designed to receive students for teaching purposes. The total area of this lab is 100 m² with the maximum capacity for this lab is 25 students. It has 25 chairs and 8 plinths for practical teaching purposes. In orthopedic lab, the student learns a specialized techniques in functional recovery and injury prevention in orthopedic and sports. Our staff have years of clinical experience treating a vast range of orthopedic and sporting conditions.

Lab activity

- ✓ Rehabilitation of Musculoskeletal injury (Chronic or sub-acute)
- ✓ Sports-related injuries, including muscle tears and strains (such as hamstring and groin), overuse injuries (such as patellofemoral pain and ITB syndrome), and tendonitis
- ✓ Traumatic and overuse injuries of the shoulder, elbow joints, hip, knee, foot and ankle joints
- ✓ Dysfunction of the neck, thoracic spine, ribs, lower back, pelvis, and TMJ.
- ✓ Post-surgical care for procedures that include ACL reconstruction and knee arthroscopy, rotator cuff repairs, shoulder stabilization, hip arthroscopy, joint replacement, and spine surgery
- ✓ Osteoarthritis

Plan for development

The lab has a development plan to request an evaluative and therapeutic modality used in teaching, rehabilitation as well as for research purposes like:

- ✓ Non-weight bearing treadmill.
- ✓ Orthotic and prosthesis unit.
- ✓ Muscle Evaluator
- ✓ Myro® multisensory therapy system
- ✓ Diego® arm rehabilitation
- ✓ GLOREHA SINFONIA The device for upper limb rehabilitation
- ✓ SpineMED Decompression therapy
- ✓ PrimusRS.



Lab Facilities



CPM Lower Limb



CPM Lower Limb



CPM Upper Limb



Musculoskeletal ultrasound



dual energy X-ray absorptiometry



Arm Ergometer



The MOTomed viva2 leg trainer

UPPER BODY CYCLE (Arm ergometer)



Upper Body Cycle



An upper-body ergometer that will exercise individuals with limited lower-body function, help rehabilitate a wide variety of shoulder, back, neck, wrist, and elbow patients, and give healthy athletes a grueling workout.



▲ Clinical Pro 950-148
Upper Body Cycle



Visit our website to view product video



Removable seat and adjustable head and cranks allow for easy, stable standing exercise.



The seat assembly is removable to accommodate wheelchairs.



EZ-Grip™ handgrip; available on the Clinical Pro, accommodates patients with hand control limitations.



Large rotating seat, available on the Clinical Pro, accommodates patients with ambulatory difficulties.



The optional hand/wrist cuffs allow users with limited or no hand strength or control to enjoy the benefits of upper body exercise.

THERE IS A DIFFERENCE...THE BIODEX ADVANTAGE.

The only Upper Body Cycle designed for rehabilitation exercise that offers an adjustable pivot head for sitting to standing total body involvement, including core stabilization exercises. Adjustable cranks allow for incremental and progressive strengthening to full range of motion.

Clinical considerations must be ensured before anyone is allowed to exercise

1. All users should have medical clearance prior to undertaking any rigorous exercise program. This is especially necessary for any user with a past history of heart rate problems or known risk factors including: family history of cardiovascular disease, elevated blood pressure, hyperlipidemia, diabetes, obesity, sedentary lifestyle and smoking.
2. Start each user at a safe exercise level. Do not allow users to overexert themselves on either UBC. Symptoms of overexertion may include, but are not limited to dizziness, nausea, pain or discomfort, shortness of breath or difficulty in breathing.
3. Prior to starting any exercise session, ensure that the user is comfortably seated. Be sure to adjust the seat fore/aft position, actuator tilt angle and arm cranks as necessary. Mechanical adjustments are described in detail in Chapter 2, Parts and Adjustments.
4. Warm-up and warm-down periods are necessary to avoid suddenly taxing the heart and circulation system, and to help prevent injury to the muscles or joints. Sufficient warm-up and warm-down periods have also been shown to reduce muscle soreness following exercise. Be sure to allow for a minimum of 3 to 5 minutes of gradually increasing exercise intensity prior to starting the actual exercise session and a similar amount of time of decreasing exercise intensity following each session.
5. Proper seat fore/aft positioning is essential. The distance of the seat from the arm cranks greatly influences involvement of the shoulder girdle and torso rotation. Moving the seat closer to the arm cranks increases shoulder retraction. Conversely, moving the seat away from the arm cranks adds to shoulder protraction. Adjustment of arm crank length and actuator tilt may also influence shoulder involvement and torso rotation.
6. Arm crank length, to a large degree, controls the total range of motion of both the elbow and shoulder. Increasing the length of the arm cranks will increase the range of extension and flexion for both elbow and shoulder. Conversely, decreasing the arm crank length will decrease the range for these joints. Adjustment of seat fore/aft position and actuator

3. Safety instructions of CPM Lower Limb Artromot



CAUTION!

these instructions must be read before start- up!

- The **ARTROMOT®-K3** may only be operated by authorized persons.
- Make sure that the patient is supported in an anatomically correct way. Check the following settings/ positioning:
 1. Femur length
 2. knee joint axis
 3. calf length and leg rotation setting
 4. patient kits
- In case of patients who are adipose, particular large or very small, you should pay attention to the following:
 - Avoid abrasion and pressure
 - If necessary support the leg in a slightly abductive position
- The maximum continuous load on the leg support element is 30 kg
- Movement must always be free of pain and irritation
- The patient must be fully conscious during instruction and when using the splint.
- The doctor or therapist must decide on a case-to-case basis whether the device can be used with the patient



CAUTION!

Before treatment begins, a test run involving several movement cycles should be carried out first without and then with the patient.

- The hand-held programming unit should be explained to the patient and must be located within the patient's reach, so that the therapy can be interrupted if necessary.

- Make sure that the characteristic values of your power supply correspond to the voltage and frequency data indicated on the ID plate.
- Only connect the **ARTROMOT®-K3** to correctly installed safety sockets.
- Repair and maintenance work may only be carried out by authorized persons, as otherwise all warranty services and liabilities shall be void.
- Perform regular checks on all components for possible damage or loose connections
- Damaged or worn parts should be replaced immediately with original spare parts by an authorized specialist.
- Before cleaning and repair disconnect the device from the main socket.
- When carrying out any work on the device, never allow liquids to get inside the housing or the hand-held programming unit.
- Only use the AC-AC adapter supplied with the unit.



CAUTION!

The **ARTROMOT®-K3** may only be operated with the attached power supply NTEV20

To disconnect the device from mains, unplug the AC-AC adapter from the wall socket.

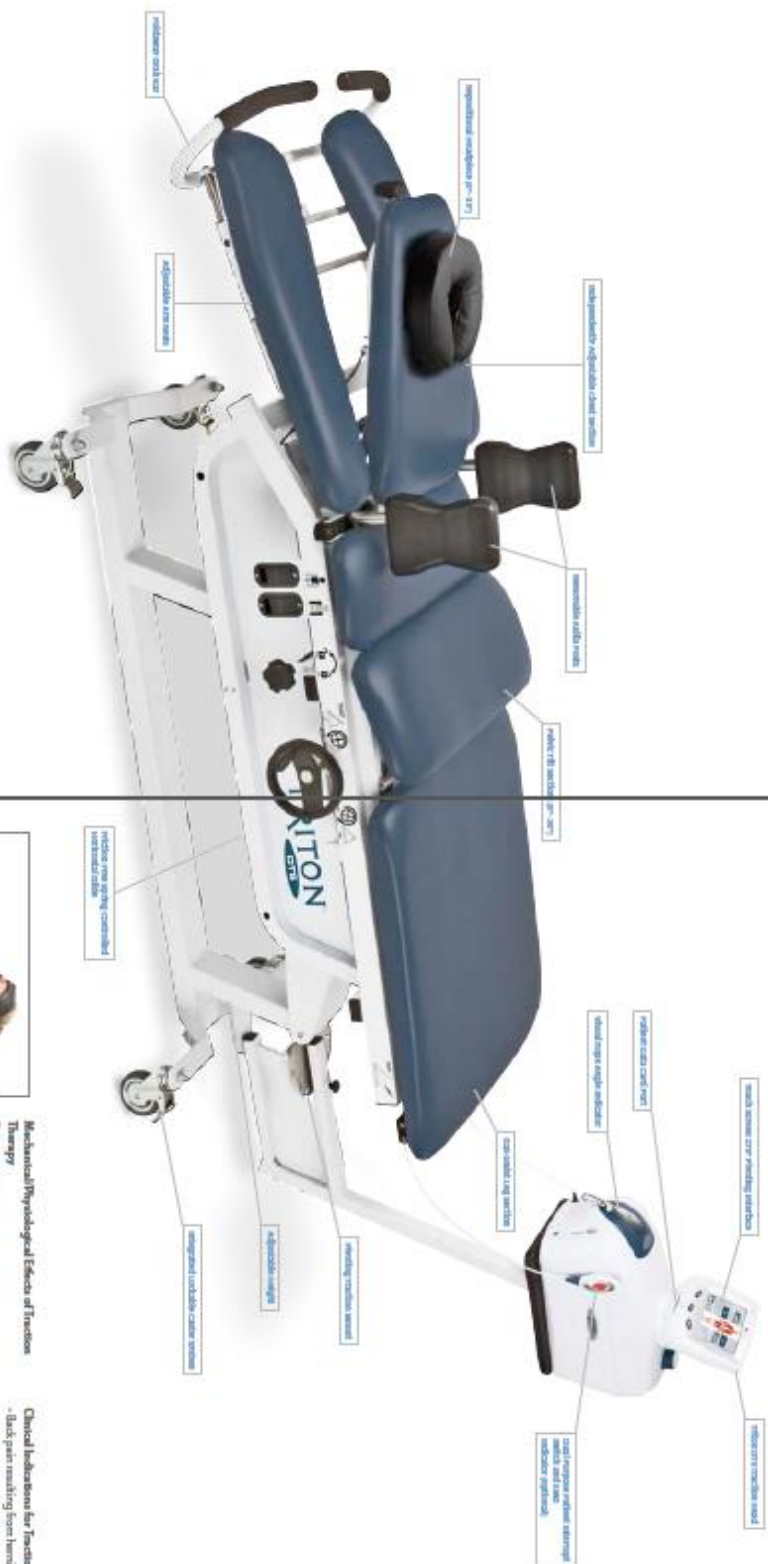
Indication of Dual-energy X-ray absorptiometry (DEXA)

1. All women aged 65 years and older and men age 70 years and older (asymptomatic screening).
2. Women younger than age 65 years who have additional risk for osteoporosis, based on medical history and other findings. Additional risk factors for osteoporosis include:
 - a. Estrogen deficiency.
 - b. A history of maternal hip fracture that occurred after the age of 50 years.
 - c. Low body mass (less than 127 lbs or 57.6 kg).
 - d. History of amenorrhea (more than 1 year before age 42 years).
3. Women younger than age 65 years or men younger than age 70 years who have additional risk factors, including:
 - a. Current use of cigarettes
 - b. Loss of height, thoracic kyphosis.
4. Individuals of any age with bone mass osteopenia, or fragility fractures on imaging studies such as radiographs, computed tomography (CT), or magnetic resonance imaging (MRI).
5. Individuals age 50 years and older who develop a wrist, hip, spine, or proximal humerus fracture with minimal or no trauma, excluding pathologic fractures.
6. Individuals of any age who develop 1 or more insufficiency fractures.
7. Individuals receiving (or expected to receive) glucocorticoid therapy for more than 3 months.
8. Individuals beginning or receiving long-term therapy with medications known to adversely affect BMD (e.g., anticonvulsant drugs, androgen deprivation therapy, aromatase inhibitor therapy, or chronic heparin).
9. Individuals with an endocrine disorder known to adversely affect BMD (e.g., hyperparathyroidism, hyperthyroidism, or Cushing's syndrome).
10. Hypogonadal men older than 18 years and men with surgically or chemotherapeutically induced castration.
11. Individuals with medical conditions that could alter BMD, such as:
 - a. Chronic renal failure.

- b. Rheumatoid arthritis and other inflammatory arthritis.
 - c. Eating disorders, including anorexia nervosa and bulimia.
 - d. Organ transplantation.
 - e. Prolonged immobilization.
 - f. Conditions associated with secondary osteoporosis, such as gastrointestinal malabsorption or malnutrition, sprue, osteomalacia, vitamin D deficiency, endometriosis, acromegaly, chronic alcoholism or established cirrhosis, and multiple myeloma.
 - g. Individuals who have had gastric bypass for obesity. The accuracy of DXA in these patients might be affected by obesity.
12. Individuals being considered for pharmacologic therapy for osteoporosis.



Clinical consideration for using the triton traction bed



Mechanical/Physiological Effects of Traction

Therapy

Decomposition

- Reduce pressure on nerves
- Unload spine
- Decrease disc bulging
- Separate vertebrae

Mobilization

- Stretch the ligaments and tendons
- Spans the capsule, facet joints and intervertebral discs
- Migration of nucleus pulposus

Anti-inflammatory response

- Decrease muscle tone
- Decrease inflammation

Circulation Improvement

- Blood flow to tissues
- Venous flow away from tissues

Clinical Indications for Traction Therapy

- Back pain resulting from herniated bulging or protruding discs
- Diagonistic pain
- Joint pain
- Spondylosis
- Facet joint disorders
- Root impingement
- Hypertrophy
- Compression fractures
- Muscle spasms
- Cervical radiculopathy

Clinical Benefits of Traction Therapy

- Decreased pain
- Decreased muscle tone
- Increased range of motion
- Increased flexibility
- Reduced edema
- Reduced disc herniation
- Reduces nerve root compression

Postural analysis Lab

Lab General Information

Postural assessment lab provides an evaluation method of static and dynamic posture for alignment and visual assessment of paired anatomic landmarks for symmetry. The lab provides evaluation methods used to determine body function and positioning through variety of different tests and comprehensive assessment.

Lab activity

- Static postural analysis.
- Force Plate form.
- Spinal curvature evaluation.
- Evaluation of the foot arches.
- Cervical ROM evaluation.
- 4D dynamic postural assessment.

Plan for development

- Spinal mouse

Lab Facilities

Global postural system



Figure 3.10.A
Frontal view
of postural analysis



Figure 3.10.B
Posterior view
of postural analysis



Figure 3.11.A
Left lateral view
of postural analysis



Figure 3.11.B
Right lateral view
of postural analysis



Figure 3.14 **Cavus foot**



Figure 3.15 **Flat foot**



Figure 3.47.A **Position of the sensors**



Figure 3.47.B **Position of the sensors**



Figure 3.47.C **Position of the sensors**

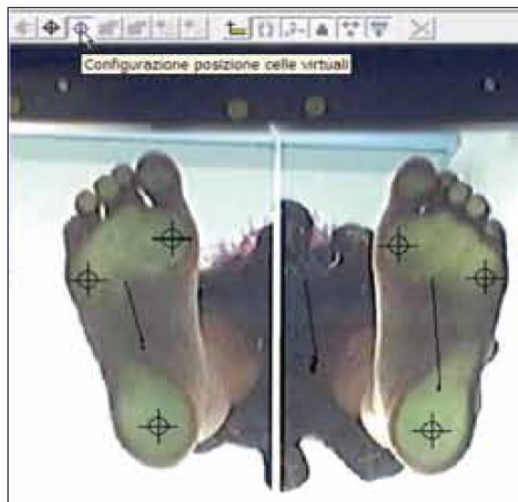




Figure 3.22.A. Movement of the head during Cervical Test



Figure 3.20 Analogue helmet

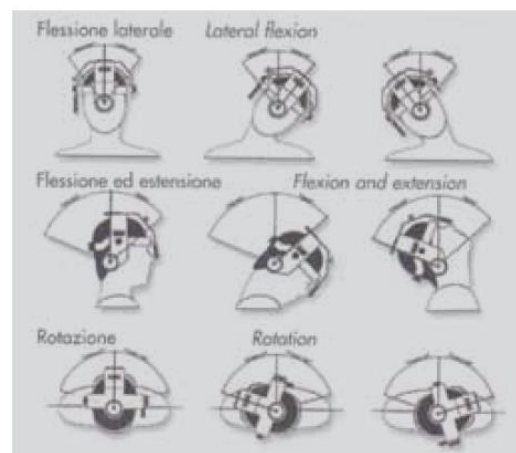


Figure 3.21 Movement of the head

4 D Formatic

3D / 4D Spine & Posture Analysis



DIERS 4D motion® Lab

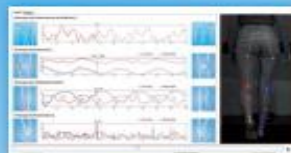
The Compact Solution for Motion Analysis

Components:

DIERS 4D motion®
Dynamic measurement of
the spine, vertebra and pelvis
with 50 fps.

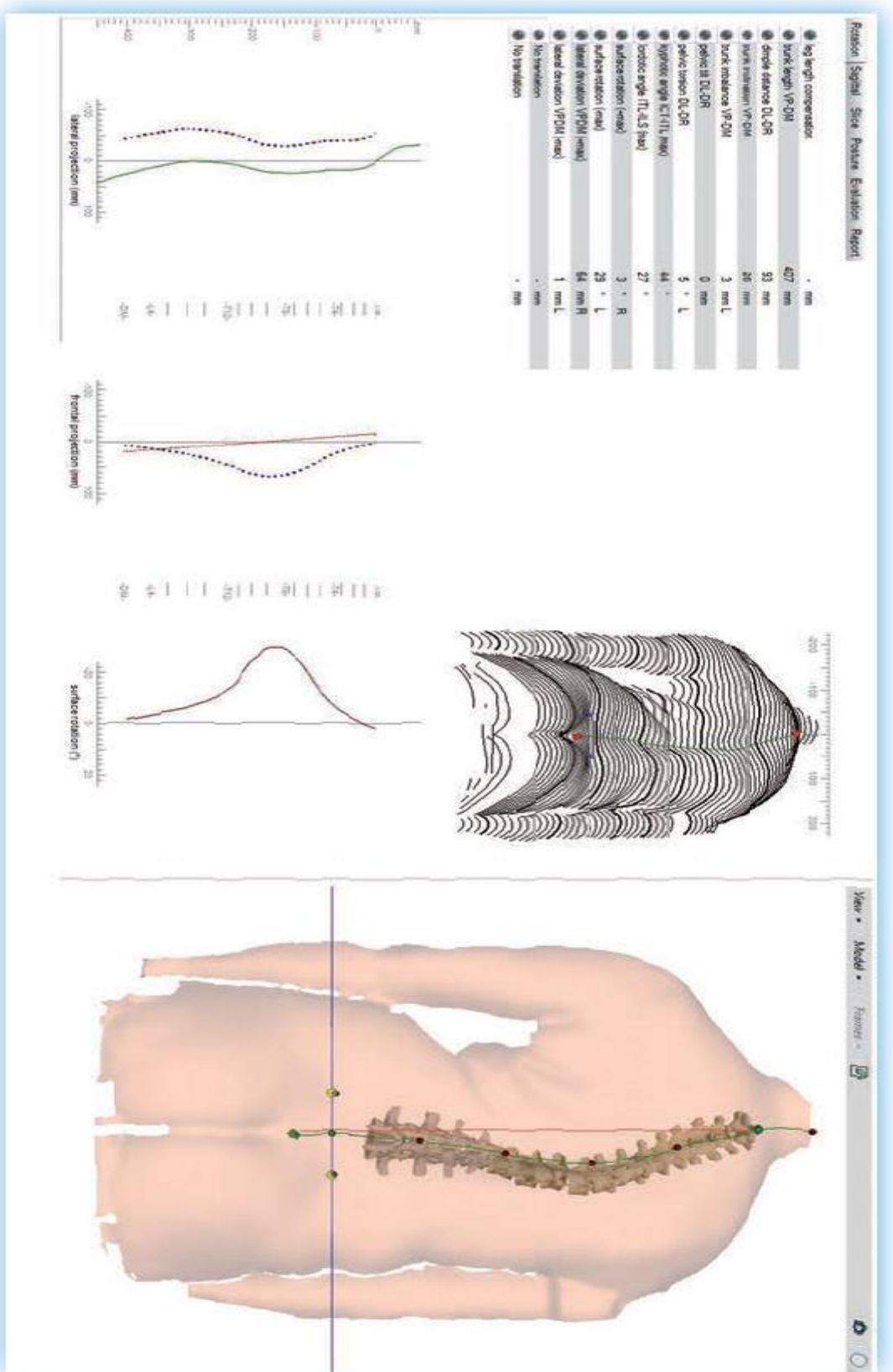


DIERS leg axis
Video Gait Analysis for the
detection and measurement
of leg axis.

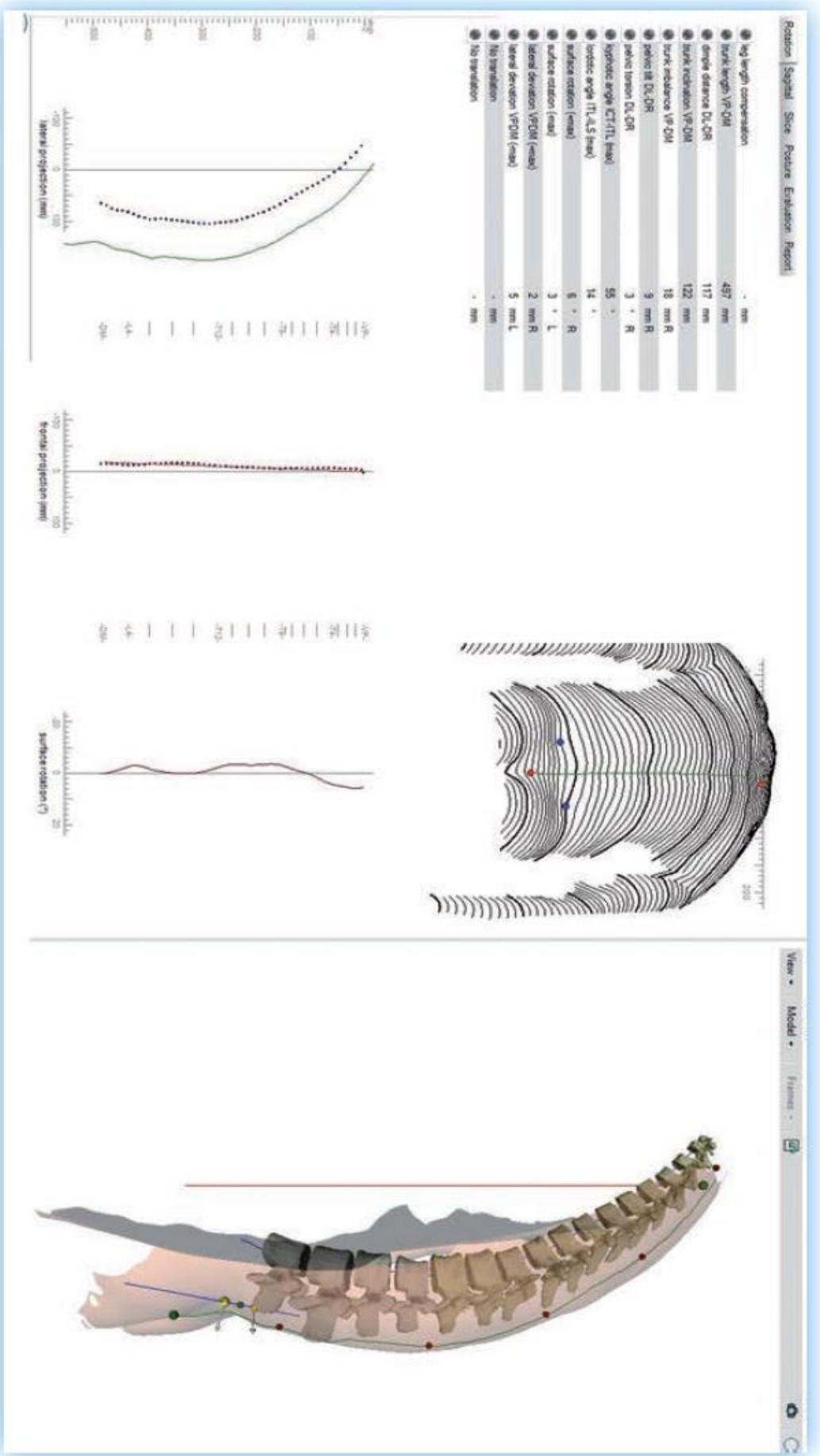


DIERS pedogait
Treadmill with integrated
pressure plate





Scoliosis



Electromyography Lab

Lab General Information

The Electromyography (EMG) is a diagnostic test used to evaluate the body's nerve and muscle function and assesses a potential neurological disease. The test may be performed in combination with a Nerve Conduction Study (NCS) test, which together, help to detect the presence, location, and extent of diseases that damage the nerves and muscles. In addition, the EMG lab provides a dynamic EMG which used for monitoring the muscle activity during movement and activity.

Lab activity:

- ✓ Nerve conduction velocity studies.
- ✓ Static Needle EMG
- ✓ Dynamic EMG
- ✓ EMG activity during movement and gait.

Plan for development

- ✓ HD-EMG grids
- ✓ Textile HD-EMG grids
- ✓ Flex PCB HD-EMG grids
- ✓ Cadwell EMG

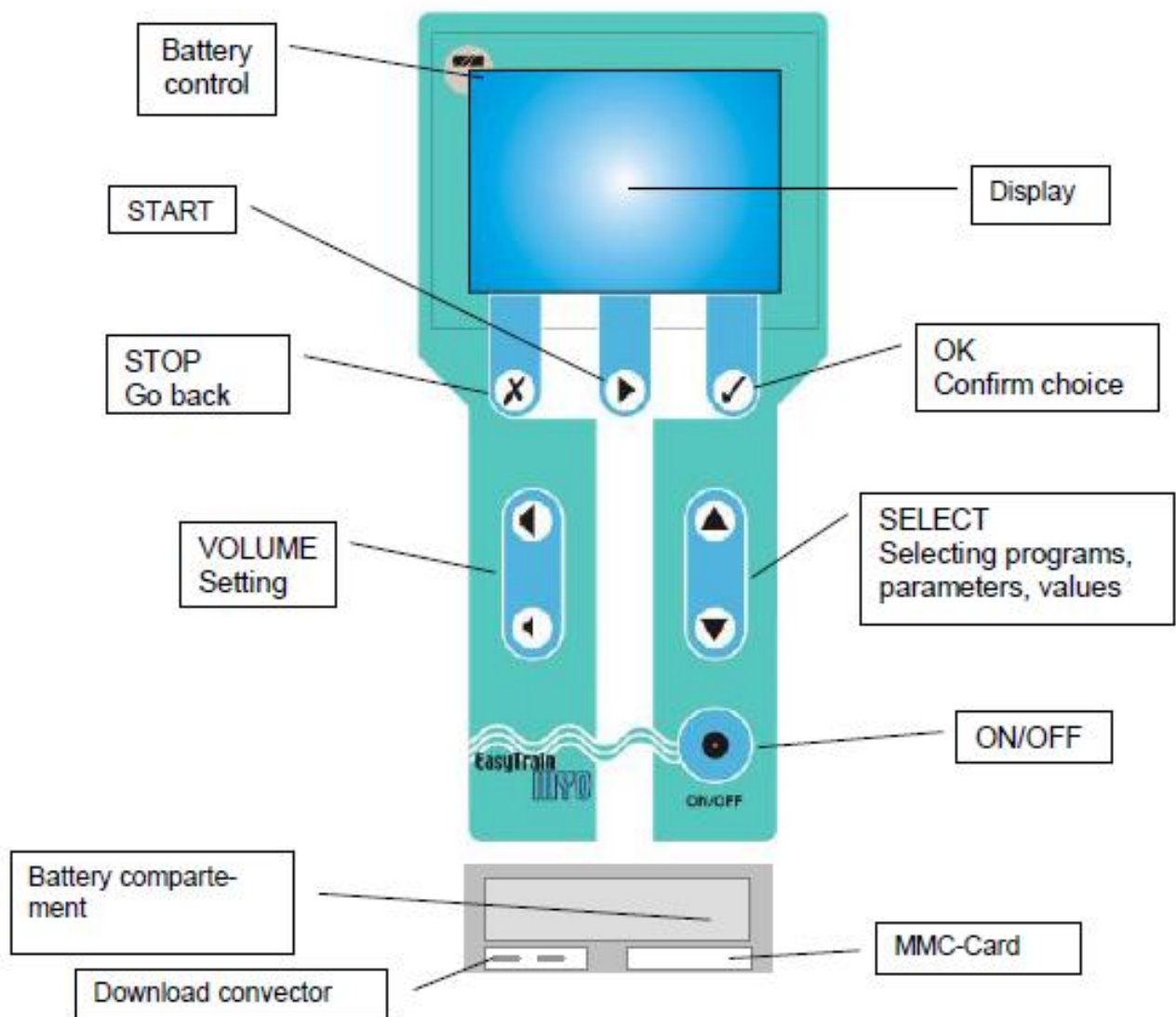
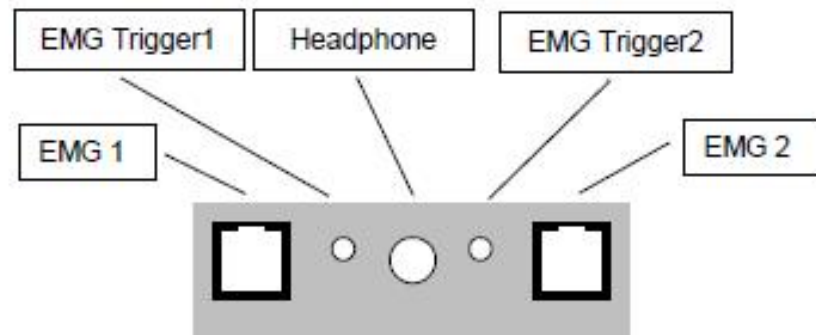
Lab Facilities

Easytrain myo:

The Easytrain MYO is a portable EMG device with a bluetooth connection to the computer. Thanks to the Bluetooth connection, therapy monitoring is enabled via the computer display. The Easytrain MYO is also equipped with a memory card to store all patient therapy data in home use.



Top view



Telemetry EMG

The TELEmyo™ 2400T G2 Transmitter is the latest generation of surface and Fine Wire telemetric EMG systems that transmits up to 100 meters. It combines high-quality, scientifically-reliable data with mobility, -exibility and ease-of-use. The most affordable way to accomplish the highest levels of reseach.



Motion analysis

Lab General Information

Motion analysis Use the state-of-the-art laboratory and field assessments focused on biomechanics, wearable sensors and EMG activity to evaluate the mobility in individuals with mobility-limiting conditions, ranging from stroke to cerebral palsy to traumatic brain injury.

Lab activity

- ✓ Motion analysis
- ✓ Gait evaluation
- ✓ Normal and abnormal postural and biomechanical changes during gait.

Plan for development

- ✓ 3-D Video Based Motion Analysis System (Motion Analysis Corporation).
- ✓ Pressure Distribution Measurements.
- ✓ Loadsols.
- ✓ Computerized Posturography System (Bertec CDP)
- ✓ Instrumented Treadmill (Treadmetrix).
- ✓ Electrogoniometers.

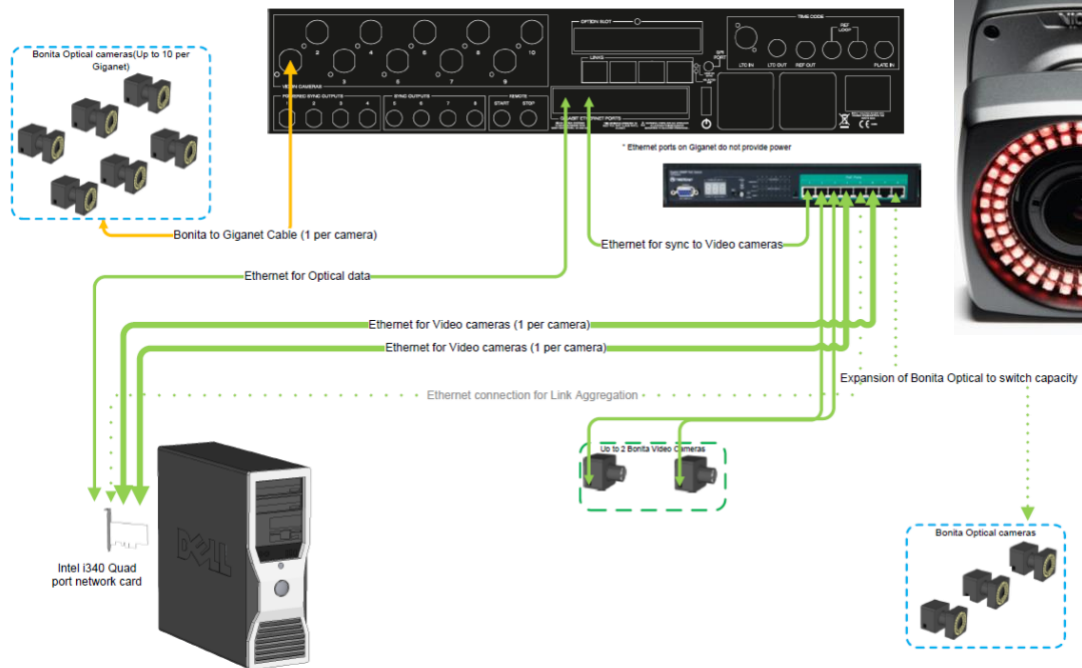
Lab Facilities

Force Plate form

Force Platform



Infra-red Camera



Vicon Nexus 2.8 - Jogging 5*

File Edit Window Help

Resources

System Subjects

Colin (PluginGait)

Markers

- LFHD
- RFHD
- LBHD
- RBHD
- C7
- T10
- CLAV
- STRN
- RBAL
- LSHO
- LUPA
- LELB
- LFRL
- LWRA
- LWRL
- LFIN
- RSHO
- RUPA
- RELB
- RFRL
- RWRA
- RWRL
- RFIN
- LASI
- RASI
- LPSI
- RPSI
- LTHI
- LKNE
- LTIB

Properties

Name: RANK

Color: [Green]

Radius (mm): 12.5

Status: Required

3D Perspective

Jogging 5

Tools

Subject: Colin (PluginGait)

Manual Labeling

Backward Whole Forward

LFHD RFHD LBHD RBHD C7 T10 CLAV STRN RBAL

Auto advance selection Find Next Unlabeled Trajectory

Swap Marker Labels

Gap Filling

Trajectory #Gaps Max Gap Length

Prev Gap Range Next Gap

Spline Fill

Maximum gap length: 100

Fill All

Rigid Body Fill

Empty Pick Sources Auto

Kinematic Fill

Empty Pick Segment Auto

Cyclic Fill

Fill All

Communications

C:\Users\Public\Documents\Vicon\Nexus Sample Data\Nexus Sample Data\Colin\Jogging\

Name	Files	Created	Modified	FP1	FP2
Colin		12-Aug-10 1:14 AM	12-Aug-10 1:14 AM		
Jogging		18-Aug-07 12:34 AM	18-Aug-07 12:34 AM	Auto	Auto
Jogging 1		30-Aug-07 10:23 AM	12-Aug-10 1:11 AM	Auto	Auto
Jogging 5		30-Aug-07 10:23 AM	06-Sep-18 2:48 PM	Auto	Auto
Jogging 4		30-Aug-07 10:23 AM	12-Aug-10 1:12 AM	Auto	Auto
Jogging 10		30-Aug-07 10:23 AM	12-Aug-10 1:11 AM	Auto	Auto
Jogging 2		30-Aug-07 10:23 AM	12-Aug-10 1:12 AM	Auto	Auto
Jogging 3		30-Aug-07 10:23 AM	12-Aug-10 1:12 AM	Auto	Auto
Jogging 7		30-Aug-07 10:23 AM	12-Aug-10 1:13 AM	Auto	Auto
Jogging 9		30-Aug-07 10:23 AM	12-Aug-10 1:13 AM	Auto	Auto
Jogging 6		30-Aug-07 10:23 AM	12-Aug-10 1:13 AM	Auto	Auto
Jogging 8		30-Aug-07 10:23 AM	12-Aug-10 1:13 AM	Auto	Auto

Data Management Quality History Monitors IMeasureU Matlab Status Log

MVN suit for motion measurement



MVN BIOMECH

Ambulatory Measurement of Human Motion

MVN Awinda starter

Standard performance



Range	~20m
Update rate	60hz
Battery life	6h
Comms	Radio protocol (Awinda)
Receiver	Awinda dongle
Hardware	17 wireless sensors T-shirt + straps
Charging	USB cable

MVN Awinda

Intermediate performance



Range	~50m
Update rate	60hz
Battery life	6h
Comms	Radio protocol (Awinda)
Receiver	Awinda station
Hardware	17(+1) wireless sensors T-shirt + straps
Charging	Charging station

MVN Link

High performance



Range	~150m
Update rate	240hz
Battery life	8 - 10h
Comms	Wi-Fi
GNSS	X
r(OBR)	X
Receiver	Wi-Fi router
Hardware	17 wireless sensors Full body lycra suit
Charging	USB cable



Pulmonary Function

Lab General Information

Pulmonary Function Lab evaluate pulmonary function tests, which are group of tests that measure how well the lungs take in and release air and how well they move gases such as oxygen from the atmosphere into the body's circulation.

Lab activity

- ✓ Physical diagnosis of patients with
- ✓ Restrictive and Obstructive Lung diseases.
- ✓ Risk for pulmonary diseases.
- ✓ Smokers
- ✓ Persons in occupations with exposures to injurious substances (agents).
- ✓ Some routine physical examinations
- ✓ Evaluation of pulmonary functions in health and disease under resting situation (Static) and stressful situation (Dynamic).
- ✓ To assess preoperative risk especially in cardiac patients.

Plan for development

- ✓ Evaluation of Energy expenditures.
- ✓ Cardiopulmonary telemetry rehabilitation Unit

Lab Facilities:

COSMED Pulmonary function Unit



Bodystat analysis

The Bodystat®1500 is a lightweight, hand-held, battery-operated Bio-impedance Analyser which is easy to use and requires no specialist skills. It is a non-invasive device, which measures the impedance value of the body providing quick and effective analysis of body composition. Whole Body analysis, rather than partial body analysis of arms or legs only, is measured for greater accuracy. The Bodystat®1500 has two main cable leads of which each lead has two crocodile/alligator clips, red and black. These clips are attached to the exposed tabs on the electrodes. The subject's Gender, Age, Height, Weight and optionally, Activity Level and Waist/Hip measurements, are entered using the three keypads. It works by passing a safe battery generated signal through the body and measuring the impedance at a fixed frequency of 50 kHz. Once the test has been performed a complete body composition analysis is displayed on the LCD screen within three seconds comprising Body Fat, Lean Body Mass, Total Body Water and optimal ranges. Metabolic rates, BMI and Waist/Hip Ratio are also displayed on the LCD screen.



Spirometer

Spirometer for measuring vital capacity Vital capacity (VC) is the maximum amount of air that can be exhaled. There is no direct relationship between VC and physical fitness. However, a certain volume of lungs is required to provide the body with an adequate amount of oxygen during exercise. Some studies have shown the increase in VC with appropriate training. Changes in VC with age or environmental factors can be monitored by periodic CV measurements.



Body composition analyzer

Body composition analyzer XBIA700 measures and analyses an individual's body composition in terms of water, fat, protein, muscle, bone mineral and much more. The device is so comprehensive that it can determine the weight of lean muscle tissue in each limb, the body's water content, percentage of body fat, bone mineral content, protein content and visceral fat levels (the fat surrounding the internal organs).



InBody

[InBody770]

BIOSPACE

TEL:02-501-3939 FAX:02-578-2716

ID	Height	Age	Gender	Test Date / Time
Jane Doe	156.9cm	51	Female	2012.05.04. 09 : 46

1 Body Composition Analysis

	Values	Total Body Water	Soft Lean Mass	Fat Free Mass	Weight
Total Body Water (L)	27.5 (26.3 ~ 32.1)	27.5	35.1 (33.8 ~ 41.7)	37.3 (35.8 ~ 43.7)	59.1 (43.9 ~ 59.5)
Protein (kg)	7.2 (7.0 ~ 8.6)				
Minerals (kg)	2.63 (2.44 ~ 2.98)				
Body Fat Mass (kg)	21.8 (10.3 ~ 16.5)				

2 Muscle-Fat Analysis

	Under	Normal	Over
Weight (kg)	65 70 85 100 115 130 145 160 175 190 205 *	59.1	
SMM (kg) Skeletal Muscle Mass	70 80 90 100 110 120 130 140 150 160 170 *	19.6	
Body Fat Mass (kg)	40 60 80 100 120 140 160 180 200 220 240 *	21.8	

3 Obesity Analysis

	Under	Normal	Over
BMI (kg/m ²)	16.0 18.0 20.0 22.0 24.0 26.0 28.0 30.0 32.0 34.0 36.0 *	24.0	
PBF (%)	60 70 80 90 100 110 120 130 140 150 160 *	36.9	

4 Segmental Lean Analysis

	Under	Normal	Over	ECW Ratio
Right Arm (kg) (%)	40 60 80 100 120 140 160 180 200 *	2.02 102.2		0.380
Left Arm (kg) (%)	40 60 80 100 120 140 160 180 200 *	1.94 98.1		0.381
Trunk (kg) (%)	70 80 90 100 110 120 130 140 150 *	17.7 95.4		0.398
Right Leg (kg) (%)	70 80 90 100 110 120 130 140 150 *	5.20 83.6		0.401
Left Leg (kg) (%)	70 80 90 100 110 120 130 140 150 *	5.02 80.6		0.403

5 ECW Ratio Analysis

	Under	Normal	Over
ECW Ratio	0.320 0.340 0.360 0.380 0.400 0.420 0.440 0.460	0.397	

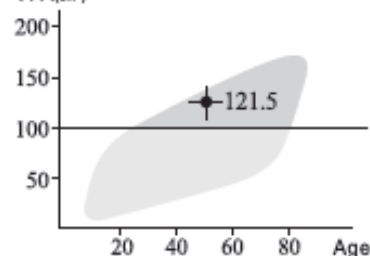
6 Body Composition History

	11.10.10 09:15	11.10.30 09:40	11.11.02 09:35	11.12.15 11:01	12.01.12 08:33	12.02.10 15:50	12.03.15 08:35	12.05.04 09:46
Weight (kg)	65.3	63.9	62.4	61.8	62.3	60.9	60.5	59.1
SMM (kg) Skeletal Muscle Mass	20.1	20.0	19.7	19.7	19.8	19.7	19.8	19.6
PBF (%)	41.3	40.7	39.2	39.0	39.4	38.6	37.8	36.9
ECW Ratio	0.399	0.398	0.396	0.396	0.397	0.396	0.398	0.397
☒ Recent ☐ Total								

7 InBody Score

68/100 Points

• Total score that reflects the evaluation of body composition. A muscular person may score over 100 points.

8 Visceral Fat AreaVFA_(cm²)**9 Weight Control**

Target Weight 51.7 kg
Weight Control - 7.4 kg
Fat Control - 9.9 kg
Muscle Control + 2.5 kg

10 Segmental Fat Analysis

Right Arm (1.5kg) 178.0%
Left Arm (1.6kg) 183.0%
Trunk (11.7kg) 240.0%
Right Leg (2.9kg) 132.0%
Left Leg (2.9kg) 132.0%

11 Research Parameters

Intracellular Water 16.6 L (16.3~19.9)
Extracellular Water 10.9 L (10.3~12.2)
Basal Metabolic Rate 1176 kcal
Waist-Hip Ratio 0.92 (0.75~0.85)
Body Cell Mass 23.8 kg (23.4~28.6)

12 Results Interpretation QR Code

Scan the QR Code to see results interpretation in more detail.

**13 Whole Body Phase Angle**

φ (°) 50 kHz | 4.3°

14 Impedance

	RA	LA	TR	RL	LL
Z (Ω) 1 kHz	379.6	392.7	26.8	306.8	316.1
5 kHz	373.1	385.4	25.7	303.0	314.1
50 kHz	337.2	352.5	23.0	282.3	289.8
250 kHz	307.9	322.9	20.4	263.3	272.7
500 kHz	297.4	311.5	19.1	258.1	267.8
1000 kHz	286.4	297.4	17.0	254.5	264.0

SPIROLAB III DIAGNOSTIC COLOUR SPIROMETER

A really complete spirometry system with high resolution colour display with built-in printer:

- FVC, VC with breathing pattern plus MVV tests with real time curves
- Over 30 parameters with automatic interpretation and test quality control
- PRE/POST bronchial response protocol with F/V loop comparison
- Up to 8 blows curve on one screen
- Internal database for about 6000 complete tests
- Predicted values with various authors
- Rechargeable battery plus mains power 220V, 50-60 Hz (110 V on request)
- User-friendly keyboard with dedicated function keys plus alphanumeric data entry
- Internal temperature sensor for automatic BTPS conversion
- Free upgradable internal software from web, maintaining previously stored data
- Selectable multilanguage internal software (GB, FR, IT)



BodyGem RMR Metabolic Testing

The BodyGem indirect calorimeter system can determine metabolic rate for your client in 5-10 minutes. Metabolic testing provides a precise measurement of your clients RMR, which can account for up to 75% of their total calorie needs.



CORTEX - Metalizer

The METALYZER® 3B is a portable high resolution spiroergometry system with Breath-by-Breath technology. The system allows a complete medical analysis of the functionality of a person's lung, heart, and metabolism at rest and under stress.



Physical Performance Lab

Lab General Information

Physical performance lab is an advanced way of evaluation of ability of muscles to produce specific movement or exercise. Physical performance lab can identify their body's strengths, weaknesses, and physical potential. Athletes can learn how to improve their performance and avoid injury. People living with physical limitations or concerned about the risks of exercise can find out which types of exercises are safe and appropriate for their abilities. Isokinetic is most used in sports science and medicine in either evaluation or in rehabilitation.

Lab activity

- ✓ Evaluation of the muscle performance of upper, lower limb and spine.
- ✓ Evaluation of function by functional simulation attachments.
- ✓ Special attachment of pediatric evaluation.
- ✓ Provide a report and graphic presentation for muscle performance throughout the full range of motion.
- ✓ A method used in strengthen the weak muscles.

Plan for development

- ✓ Nord Board for hamstring training
- ✓ Human Track Movement Analysis System.
- ✓ Force Frame Strength Testing System.
- ✓ Force Deck Dual Force Plate System.



Lab Facilities:**Isokinetic dynamometer**

Isokinetic dynamometers are passive devices which resist applied forces and control the speed of exercise at a predetermined rate. Such dynamometers generally provide a record of applied force throughout a joint range of motion. Advantages of isokinetic exercise include safety, accommodating resistance and the facility for muscle force analysis. Despite the advantages that isokinetic dynamometry provides, there are a number of considerations that are important in the interpretation of force recordings.

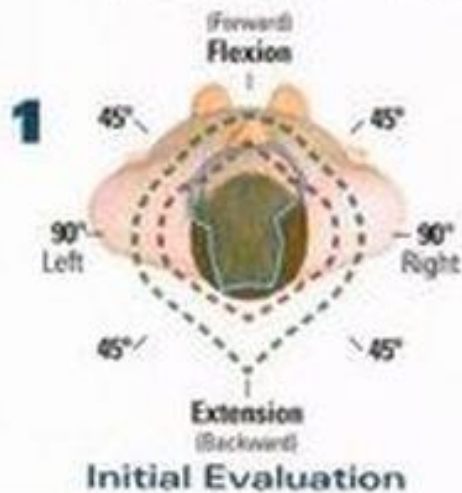


Multi-Cervical Unit (MCU)

The Multi-Cervical Unit is the most effective, complete system for the assessment and rehabilitation of patients suffering from neck pain, whiplash associated disorders (WAD), and general cervical spine disorders. It is the only research-backed tool of its kind that empowers physical therapists and chiropractors to objectively evaluate, strengthen, and restore the ailing neck and cervical spine.

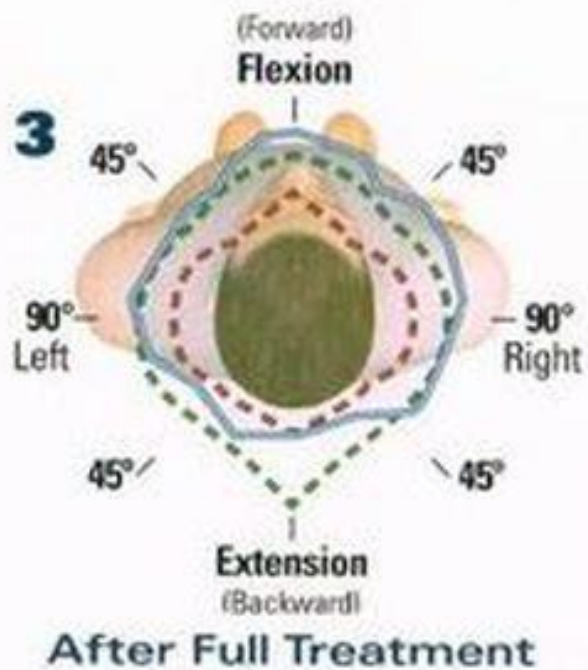


MCU 360° Neck Strength Graphs



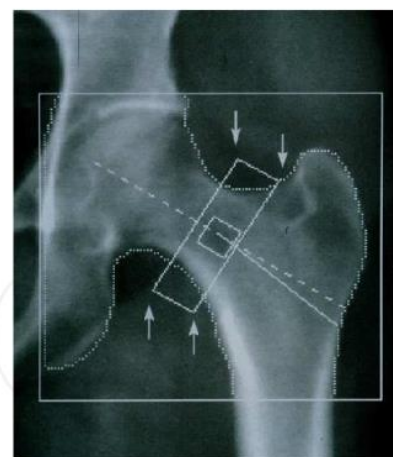
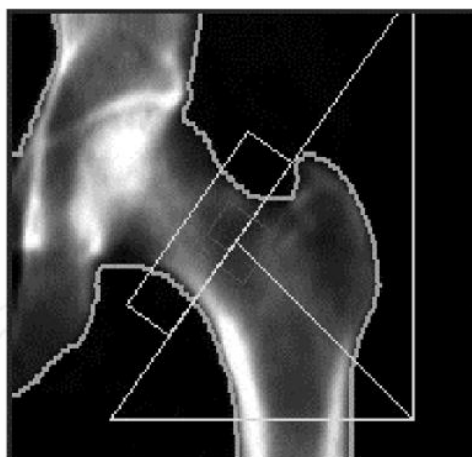
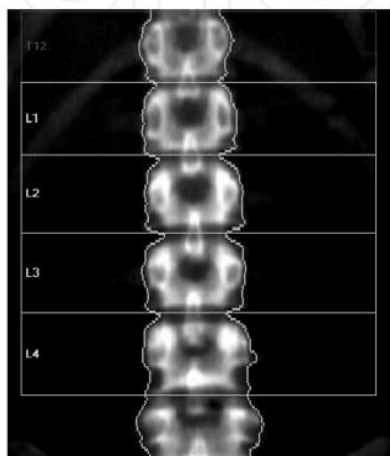
Actual Patient Progress BTE MCU Graphs (Overhead View)

-  Patient's Actual Measured Strength
-  Minimum Target Strength Range
-  Maximum Target Strength Range



DEXA Hologic for measuring bone mineral density

The Body Logic™ scan is considered the gold standard for body composition measurement and is the most accurate way to measure body fat, lean muscle mass, and bone density. The Advanced Body Composition® Assessment, available with the Body Logic scan on the Horizon® DXA system, provides a comprehensive look at the body, including bone, muscle, limb comparison, muscle imbalances, and more. Its high precision and accuracy make it the most reliable option available today.



LABS MANUAL

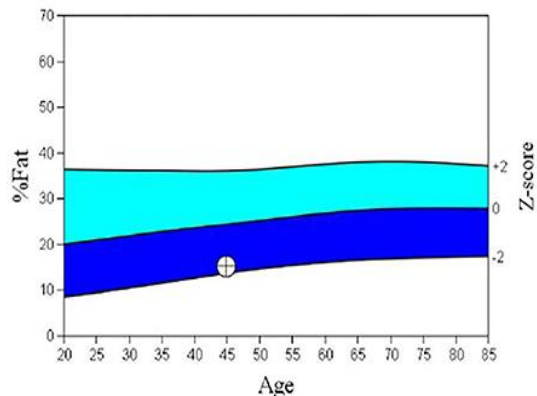
Name: Test, Test
Patient ID:
DOB: 05 March 1974

Sex: Male
Ethnicity: White

Height: 180.0 cm
Weight: 68.5 kg
Age: 44



Total Body % Fat



Source: NHANES Classic White Male.

World Health Organization Body Mass Index Classification
BMI = 21.1 WHO Classification Normal



BMI has some limitations and an actual diagnosis of overweight or obesity should be made by a health professional. Obesity is associated with heart disease, certain types of cancer, type 2 diabetes, and other health risks. The higher a person's BMI is above 25, the greater their weight-related risks.

Body Composition Results

Region	Fat Mass (g)	Lean + BMC (g)	Total Mass (g)	% Fat	% Fat YN	Percentile AM
L Arm	579	3461	4041	14.3	29	11
R Arm	618	3319	3937	15.7	35	15
Trunk	4563	29147	33710	13.5	17	4
L Leg	1961	9915	11876	16.5	19	11
R Leg	1909	10431	12341	15.5	14	7
Subtotal	9631	56274	65905	14.6	18	4
Head	1161	3508	4669	24.9		
Total	10792	59782	70574	15.3	19	5
Android (A)	777	4288	5065	15.3		
Gynoid (G)	2079	9774	11854	17.5		

Scan Date: 17 December 2018 ID: A1217180B
Scan Type: a Whole Body
Analysis: 06 August 2019 13:45 Version 13.6.0.5
Auto Whole Body Fan Beam
Operator: DA
Model: Horizon A (S/N 301197M)
Comment: Valutazione BCA

Adipose Indices

Measure	Result	Percentile YN	Percentile AM
Total Body % Fat	15.3	19	5
Fat Mass/Height ² (kg/m ²)	3.33	17	5
Android/Gynoid Ratio	0.87		
% Fat Trunk/% Fat Legs	0.85	37	12
Trunk/Limb Fat Mass Ratio	0.90	36	10
Est. VAT Mass (g)	312		
Est. VAT Volume (cm ³)	338		
Est. VAT Area (cm ²)	64.8		

Lean Indices

Measure	Result	Percentile YN	Percentile AM
Lean/Height ² (kg/m ²)	17.6	20	12
Appen. Lean/Height ² (kg/m ²)	7.91	20	16

Est. VAT = Estimated Visceral Adipose Tissue
YN = Young Normal
AM = Age Matched



Instructions for using labs



THINK
THIS IS YOUR HOME
FIVE DAYS OF THE WEEK
HELP KEEP IT CLEAN



**NO
SMOKING**
Thank You



**No eating or
drinking**



Do **NOT** Write or scratch
It is yours. Please, keep it
sound and clean



No entry without
your scrub or lab coat



Keep calm
and arrive on time

This is a learning area



All mobile phone **must**
be switched off

Thank you