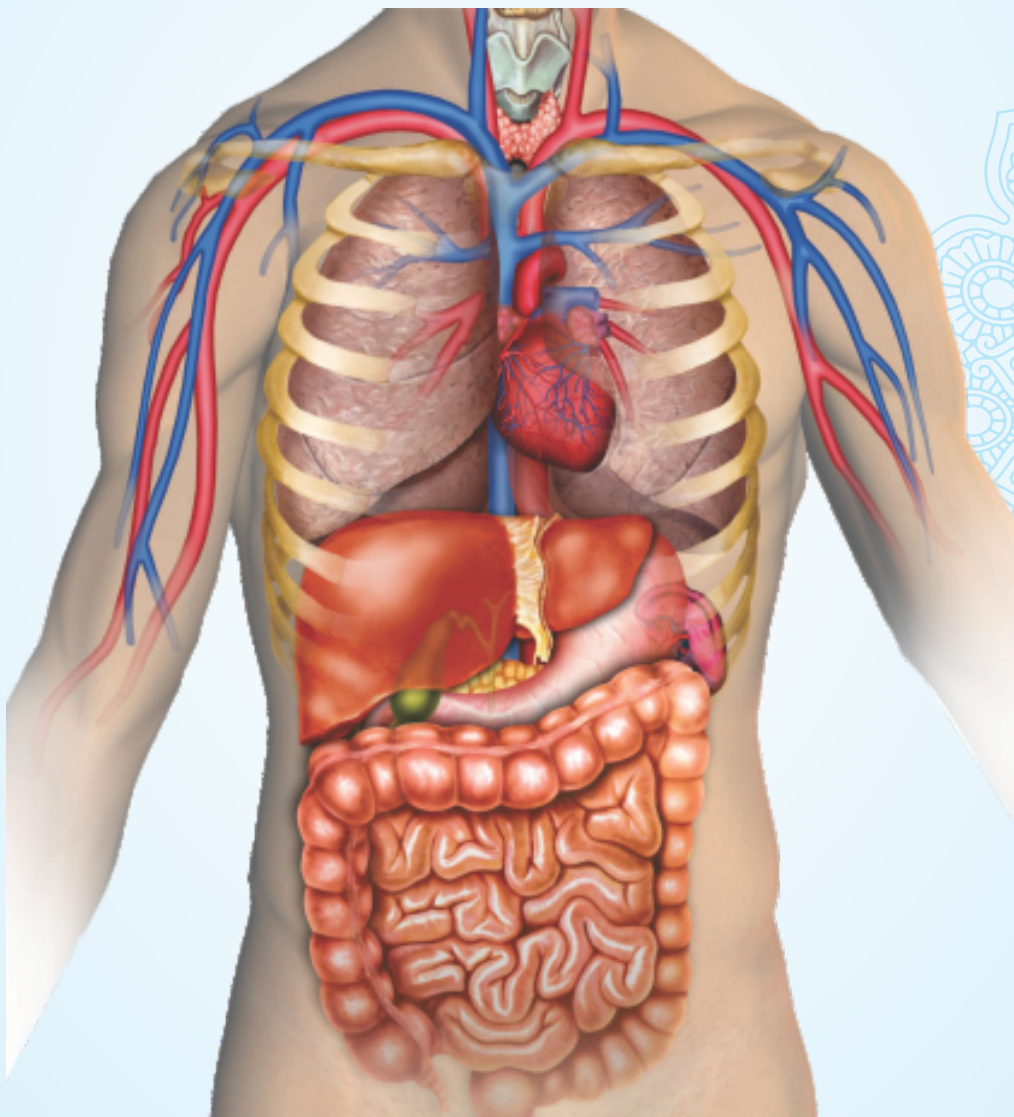


# HUMAN ANATOMY LABORATORY

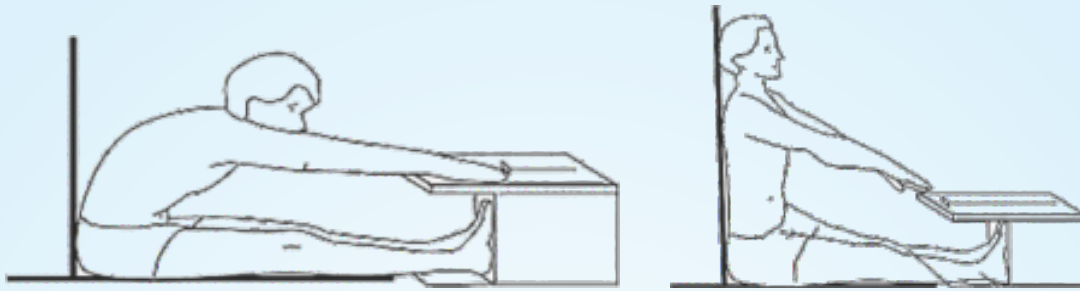


# Introduction to Equipment's

| <b>Sl. No.</b> | <b>Equipment's</b>                                   | <b>Page No.</b> |
|----------------|--|-----------------|
| <b>1.</b>      | <b>Sit and Reach Box to assess flexibility</b>       | <b>3</b>        |
| <b>2.</b>      | <b>Goniometer (Full Circle, Half Circle, Finger)</b> | <b>4-6</b>      |
| <b>3.</b>      | <b>Hand Grip Dynamometer</b>                         | <b>7-8</b>      |
| <b>4.</b>      | <b>Hand Held Manual Muscle Tester</b>                | <b>9-10</b>     |
| <b>5.</b>      | <b>Posture Evaluation Set (Grid and Evaluator)</b>   | <b>11-12</b>    |
| <b>6.</b>      | <b>Algometer</b>                                     | <b>13-14</b>    |
| <b>7.</b>      | <b>Digital Inclinometer</b>                          | <b>15-16</b>    |
| <b>8.</b>      | <b>Modified Sit and Reach Box</b>                    | <b>17-18</b>    |



# Sit and Reach Box to assess flexibility



## MODEL: 12-1085

### ➤ Specifications

- Sit and reach box with Adjustable measuring bar
- Dimensions: 30" x 4" x 13"
- Weight: 16 lbs
- Results can be read in inches and centimetres

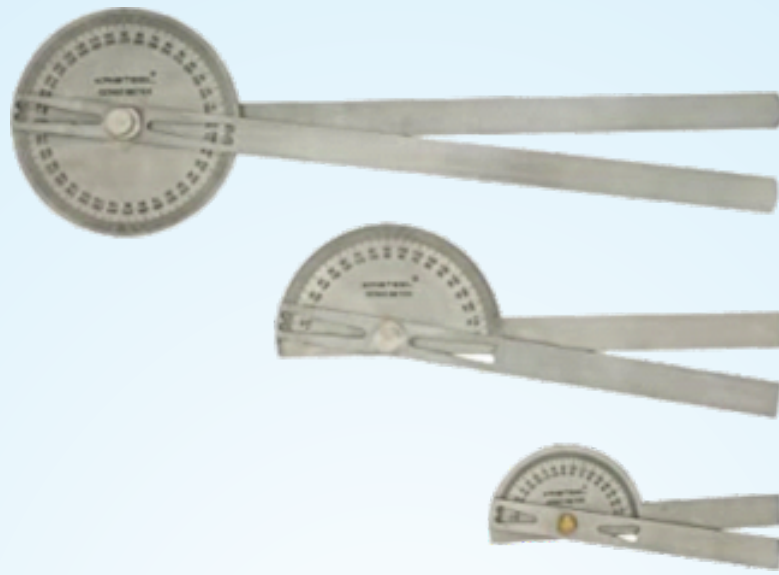
### ➤ Brief Description

- This Trunk Flexibility Tester (Sit and Reach Tester) is specifically designed to evaluate the flexibility of a selected set of joints and small muscles including the lower back vertebrae, larger hamstring muscles and hip flexor joints. These groups work together to provide trunk flexibility.
- There are different protocols and different scales used for flexibility tests. When administering a test, it is important to follow the instructions provided with the testing protocol.

### ➤ References

- Wells, K.F. & Dillon, E.K. (1952). The sit and reach. A test of back and leg flexibility. *Research Quarterly*, 23. 115-118.
- Criterion-related validity of four clinical tests used to measure hamstring flexibility in professional futsal players. (*Physical therapy in sport: official journal of the Association of Chartered Physiotherapists in Sports Medicine* 12(4):175-81 November 2011 DOI:10.1016/j.ptsp.2011.02.005)

# Goniometer (Full Circle, Half Circle, Finger)



## ➤ Specifications

- Made of Stainless Steel
- 6" and 8" have 180 degree protractor scale half round model.
- 12" have full round 360 degree protractor scale
- Set of 3 pieces

## ➤ Brief Description

- Goniometry is an important part of a comprehensive evaluation of joints and surrounding soft tissue. A comprehensive evaluation typically begins by interviewing the subject and reviewing records to obtain an accurate description of current symptoms, functional abilities, occupational and recreational activities, and past medical history.
- Goniometric data used in conjunction with order information can provide a basis for:
  1. Determining the presence or absence of dysfunction
  2. Establishing a diagnosis
  3. Developing treatment goals
  4. Evaluating progress or lack of progress toward rehabilitative goals
  5. Modifying treatment
  6. Motivating the subject
  7. Researching the effectiveness of specific therapeutic techniques or regimens, for example, exercises, medications, and surgical procedures



## ➤ References

- Gates DH, Walters LS, Cowley J, Wilken JM, Resnik L. Range of Motion Requirements for Upper-Limb Activities of Daily Living. *Am J Occup Ther.* 2016 Jan-Feb;70(1):7001350010p1-7001350010p10. [PMC free article] [PubMed]
- Keogh JWL, Cox A, Anderson S, Liew B, Olsen A, Schram B, Furness J. Reliability and validity of clinically accessible smartphone applications to measure joint range of motion: A systematic review. *PLoS One.* 2019;14(5):e0215806. [PMC free article] [PubMed]
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- Ferriero G, Sartorio F, Foti C, Primavera D, Brigatti E, Vercelli S. Reliability of a new application for smartphones (DrGoniometer) for elbow angle measurement. *PM R.* 2011 Dec;3(12):1153-4. [PubMed]
- Nizamis K, Rijken NHM, Mendes A, Janssen MMHP, Bergsma A, Koopman BFJM. A Novel Setup and Protocol to Measure the Range of Motion of the Wrist and the Hand. *Sensors (Basel).* 2018 Sep 25;18(10) [PMC free article] [PubMed]
- Carley P, Burkhart KL, Sheridan C. Virtual Reality vs Goniometry: Intraclass Correlation Coefficient to Determine Inter-Rater Reliability for Measuring Shoulder Range of Motion. *J Allied Health.* 2021 Summer;50(2):161-165. [PubMed]

# Hand Grip Dynamometer

## ➤ Specifications

- Dual-Scale Readout: Displays grip force in pounds and kilograms 200 pounds or 90 kilograms maximum reading.
- Peak-Hold Needle: For convenience and ease of recording, it automatically retains the highest reading on the peak–hold needle. That reading will remain on the gauge until it is reset.
- Accurate and Reproducible: It is isometric in use, with almost no perceptible motion of the handles, regardless of grip strength. This ensures accurate, reproducible results.
- Adjustable Handle: To accommodate various size hands, the handle adjusts to five grip positions: from 1 3/8" to 3 3/8", in half–inch increments. Since grip strength may also vary in an individual patient; this feature allows therapists to quantify grip strength for different size objects.



## ➤ Brief Description

- The purpose of using a hand dynamometer is to measure the maximum isometric strength of the hand and forearm muscles. Grip strength can be positively related to bone mineral density, or osteoporosis, increased mortality from cardiovascular disease, frailty and disability.
- The Saehan SH5001 Hand Dynamometer offers numerous features for standard screening work, as well as for assessing hand trauma and disease.

## ➤ References

- Assessment of hand grip strength- validity and reliability of the saehan dynamometer June 2011 DOI:10.1590/S1809-29502011000200013
- Denk K, Lennon S, Gordon S, et al. The association between decreased hand grip strength and hip fracture in older people: A systematic review. *Exp Gerontol.* 2018;111:1–9.
- Kamiya K, Kajita E, Tachiki T, et al. Association between hand-grip strength and site-specific risks of major osteoporotic fracture: Results from the Japanese Population-based Osteoporosis Cohort Study. *Maturitas.* 2019;130:13–20.
- Rantanen T, Guralnik JM, Sakari-Rantala R, et al. Disability, physical activity, and muscle strength in older women: the Women's Health and Aging Study. *Arch Phys Med Rehabil.* 1999;80:130–135.

# Hand Held Manual Muscle Tester

## MODEL: MICROFET2

### ➤ Specifications

- Measurement Range 0-300 lbs force
- Easy To Read LCD Displays Show Peak Force and Elapsed Time
- Selectable units of measure: pounds (lbs.), Newtons (N), or kilogram-force (kgf)
- Accuracy within 1% of the reading
- Two threshold settings for muscle testing:  
Low Threshold – 0.8 lb. to 300 lbs. in 0.1 lb. increments and High Threshold – 3.0 lbs. to 300 lbs. in 0.1 lb. increments
- Stores up to 30 tests
- Uses rechargeable lithium ion rechargeable battery
- Self-activating “sleep” mode after 3 minutes to extend battery life
- Inclusive of software (clinical and data collection)



### ➤ Brief Description

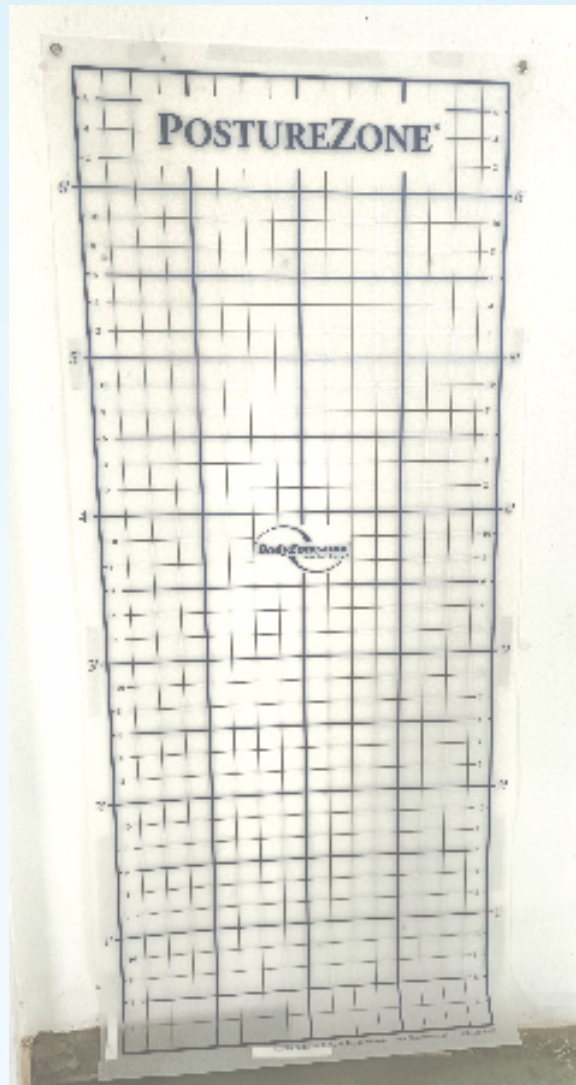
- The microFET@2 is a wireless-capable dynamometer that measures the peak force applied to attached transducer pad and its duration during any muscle test.
- MicroFET 2 is a hand-held dynamometer (HHD) for performing muscle tests to quantitatively measure muscle weakness caused by injury, as well as measure general muscle strength. The device is used to convey an individual's ability to resist force for a specific muscle or muscle group being tested.

### ➤ References

- Intra- and inter-rate reliability, agreement, and minimal detectable change of the handheld dynamometer in individuals with symptomatic hip osteoarthritis (2023 Jun 8;18(6):e0278086.doi: 10.1371/journal.pone.0278086. eCollection 2023)
- Dynamometry testing in spinal cord injur (J Rehabil Res Dev 2007;44(1):123-36. doi: 10.1682/jrrd.2005.11.0172.)
- Reliability of hand-held dynamometry and functional strength tests for the lower extremity in children with Cerebral Palsy (DisabiRehabil2008;30(18):1358-66.doi: 10.1080/09638280701639873.



# Posture Evaluation Set (Grid and Evaluator)



**Model: Posturegrid Wall Mount**

## ➤ **Specifications**

- Provides accurate and repeatable measurement
- Plastic posture grid "25'x48'
- Can be suspended from the ceiling

## ➤ **Brief Description**

- Simple method for evaluation of posture.
- Posture grids are designed to provide rapid visual cues of an individual's posture to aid in correcting postural deviations, and for education on proper posture.
- To be used for teaching/demonstration/patient education.



# Algometer



Model: Jtech

## ➤ Specifications

- Wireless
- Identify trigger points and pressure thresholds/pain tolerance.
- Fine resolution.
- Identifies small yet clinically significant changes with pressure changes.
- Fits into shape of hand to provide secure grip
- 1cm square, 0.5cm square pressure measuring tips for both large and small muscles of hand and neck.
- Inclusive of software to easily create reports from the collected data

## ➤ Brief Description

- The Commander Echo Algometer is used to identify small changes in pressure sensitivity. Two pressure measurement tips for applying to large and small muscles of the head and neck. Includes algometer with flat pad; two tips: 1cm<sup>2</sup> and 0.5 cm<sup>2</sup>. The Commander Echo Algometer requires the wireless console unit to record and collect data, store results, and compute statistics.

## ➤ References

- Intra-rater reliability of pressure pain threshold using a digital algometer (October 2020 PeerJ 8(1)DOI:10.7717/peerj.10162)
- A Clinical Study on the Diagnosis and Observation of Functional Dyspepsia - Focused on Algometer (The Journal of Korean Medicine 2022; 43(4): 1-7. DOI: <https://doi.org/10.13048/jkm.22042>)

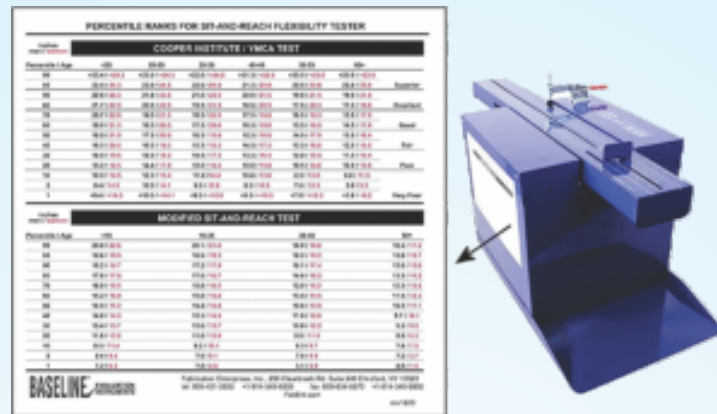
# Digital Inclinometer



MODEL: BASELINE/12-1057

- Specifications
  - Measures spine Range of Motion (Spinal Flexion, Extension, Lateral Flexion, Rotation)
  - Stores entire series of events
  - Digital LCD display
  - Covers 360 Degrees (displays +180 degrees to -180 Degrees)
  - Stored data can be sent manually or sent wirelessly to a computer
  - Multiple data storage
- Brief Description
  - · Primarily used to obtain dynamic joint movements.
  - · Shall be used for demonstration as well as research purpose to quantify the gains in Range of motion.
- References
  - Validity and Reliability of Digital Inclinometer for Assessment of Joint Position Sense in Patients with Knee Osteoarthritis (Sport Rehabil. 2017 Jan;26(1):jsr.2015-0138.doi: 10.1123/jsr.2015-0138. Epub 2016 Aug 24)
  - Validity and reliability of a digital inclinometer to assess knee position sense in an open kinetic chain (J Sport Rehabil 2019 May 1;28(4):332-338. doi: 10.1123/jsr.2017-0221. Epub 2018 Dec 12).

# Modified Sit and Reach Box



Model: Baseline/delux

## ➤ Specifications

- Dimensions: 30" x 12" x 13" when assembled
- Weight: 14 lbs
- Designed for the modified sit and reach test can also be used for standard test.

## ➤ Brief Description

- This Trunk Flexibility Tester (Sit and Reach Tester) is specifically designed to evaluate the flexibility of a selected set of joints and small muscles including the lower back vertebrae, larger hamstring muscles and hip flexor joints. These groups work together to provide trunk flexibility.
- A Standard flexibility tester does not compensate for variations in the length of arms and legs of the person being tested. People with long arms and short legs have an advantage, while people with long legs and short arms are at a disadvantage.

## ➤ References

- Normative values of lower back and hamstring flexibility for nigerians using the modified sit-and-reach test (DOI:10.1142/S0218957712500157 July 2012 Journal of Musculoskeletal Research 15(03) DOI:10.1142/S0218957712500157
- Comparing the Sit and Reach with the Modified Sit and Reach in Measuring Flexibility in Adolescents
- 9 (Werner W.K. Hoeger David R. Hopkins Sherman Button and Troy A. Palmer DOI: <https://doi.org/10.1123/pes.2.2.156>)

# MORARJI DESAI NATIONAL INSTITUTE OF YOGA

## MINISTRY OF Ayush, GOVERNMENT OF INDIA

### LIST OF CHARTS

| S.NO | Name of the Chart with Roller / Aluminium frame | Utility   | Quantity |
|------|---|---|----------|
| 1    | The Musculoskeletal System                      | To display in Anatomy Lab for illustrating in detail about the structure and function of human body | 01       |
| 2    | The Skeletal System                             |   | 01       |
| 3    | The Human Skull                                 |   | 01       |
| 4    | The Vertebral Column                            |   | 01       |
| 5    | Human Spine Disorder                            |   | 01       |
| 6    | Hip and Knee                                    |   | 01       |
| 7    | Head and Neck                                   |   | 01       |
| 8    | Anatomy of the Heart                            |   | 01       |
| 9    | The Vascular System                             |   | 01       |
| 10   | The Nervous System                              |   | 01       |
| 11   | The Spinal Nerves                               |   | 01       |
| 12   | Autonomic Nervous System                        |   | 01       |
| 13   | Anatomy of the Brain                            |   | 01       |
| 14   | The Digestive System                            |   | 01       |
| 15   | The Kidney                                      |   | 01       |
| 16   | The Lymphatic System                            |   | 01       |
| 17   | The Respiratory System                          |   | 01       |
| 18   | Ear nose and Throat                             |   | 01       |
| 19   | The Eye   |   | 01       |
| 20   | The Female Reproductive System                  |   | 01       |



## Various Models in Human Anatomy Laboratory are as follows:

| S.No. | Name of the Models                      | Utility   | Quantity |
|-------|---|---|----------|
| 1     | Disarticulated Skeleton model life size | • It is an anatomical replica of the human body's skeletal system which represents the bone structure of the human body. It is used to demonstrate the students relating to human body's base structure.                      | 01       |
| 2     | Life size skull model                   | • This model provides the detailed structure of the human skull.  | 02       |
| 3     | Hip joint model life size               | • It includes flexible, artificial ligaments and used to demonstrate the structure and type of joints.  | 02       |
| 4     | Knee joint model life size              | • It includes flexible, artificial ligaments and used to demonstrate the structure and type of joints.  | 02       |
| 5     | Shoulder complex model life size        | • To demonstrate the different type of joints in shoulder complex.  | 02       |
| 6     | Vertebral column with pelvis            | • To demonstrate all the significant features of each vertebra including the mobile unit of vertebral column, including nerve roots and the vertebral artery.   | 01       |
| 7     | Heart Model                             | • To demonstrate structure of heart.  | 02       |
| 8     | Lung Model                              | • To demonstrate structure of Lung.   | 02       |
| 9     | Liver Model                             | • To demonstrate structure of Liver.  | 02       |
| 10    | Kidney Model                            | • To demonstrate structure of kidney.   | 02       |
| 11    | Reproductive System                     | • To demonstrate the male reproductive system and female reproductive system  | 02       |
| 12    | Muscular System                         | • To demonstrate all major muscles of the axial and appendicular skeleton, both superficial and deep.   | 02       |
| 13    | Eye Model                               | • To demonstrate the internal feature of eyes.  | 02       |
| 14    | Ear Model                               | • To demonstrate the internal and external structures of the external ear, middle ear, and internal ear.  | 02       |
| 15    | Nose Model                              | • To study and understand the structure of the nose.  | 02       |
| 16    | Brain Model                             | • To demonstrate external features of human brain and its arterial supply as a whole, as well as the relations between their component portions. External features of the brain: cerebral hemisphere, brain stem, cerebellum. | 02       |
| 17    | Digestive System                        | • To demonstrate the size, shape, and structure of the human digestive system, including the esophagus, stomach, small intestine, large intestine, liver, pancreas, and rectum.   | 02       |
| 18    | Human Torso with wooden cabinet         | • To demonstrate the location of internal organs.   | 01       |
| 19    | Articulated Human Skeleton Life Size    | • To demonstrate the human skeleton system.   | 01       |
| 20    | Human Wrist Joint Model                 | • To Demonstrates all of hand functionality and the external anatomical structures.   | 01       |
| 21    | Human Ankle-Foot Complex                | • To demonstrate anatomical structures of the ankle and foot.   | 01       |

## Various Instruments available for theory and practical classes are as follows:

| S.No. | Name of the Instrument                   | Utility   | Quantity |
|-------|--|---|----------|
| 1.    | Sit and Reach Box to assess flexibility. | • To assess flexibility of the spine and length of the hamstring muscles. | 01       |
| 2.    | Full Circle Goniometer                   | • It is used to measure range of motion.                                  | 10       |
| 3.    | Half Circle Goniometer                   | • It is used to measure range of motion.                                  | 10       |
| 4.    | Finger Goniometer                        | • It is used to measure range of motion of finger joints.                 | 10       |
| 5.    | Hand Grip Dynamometer                    | • It is used to measure hand grip strength.                               | 01       |

### Instruments procured and in process of installation.

| S.No. | Name of the equipment                       | Utility  | Quantity |
|-------|---|--|----------|
| 1.    | Hand Held Manual Muscle Tester              | • To quantify the force applied during manual muscle strength testing  | 01       |
| 2.    | Posture Evaluation Set (Grid and Evaluator) | • Will be used for teaching/demonstration about posture.   | 01       |
| 3.    | Algometer                                   | • To identify trigger points and pressure thresholds/pain tolerance  | 01       |
| 4.    | Digital Inclinator                          | • Shall be used for demonstration as well as research purpose to quantify the gains in Range of motion.        | 01       |
| 5.    | Modified Sit and Reach Box                  | • To assess flexibility of the spine and length of the hamstring muscles and to accommodate different heights. | 01       |