Certified Personal Fitness Trainer Course: (CPFTC)

Brief Description: This is the most comprehensive Fitness Trainer training program in India. This course follows two Syllabus one NSQF LEVEL 5 and another MIHFM personal training along with Eight short term Specialization subject, The NSQF Level 5 of the National Skill Qualification Framework is also called the **O-Level certificate**. It is equivalent to an IT diploma. Level 5 National Skill Qualification Framework aims to prepare learners to become skilful and take a job of their choice and work in a familiar environment. MIHFM personal training program enable a trainee to designee a need base exercise program for their client for both on line and physical format. Several specialization certifications helps trainee to transform the knowledge in to skill.

Certifications: 11 certificates

Three vocational course certificate:

1. NSQF Level 5: **Personal Fitness Trainer**
2. MIHFM Personal Training certificate.
3. Advance Strength Training Course (ASTC)

Eight Short terms Specialist Certification

1. Certified Kettlebell Specialist L1 (CKSL1)
2. Functional Strength Trainer Specialist, (FSTS)
3. Exercise & Fitness Psychology Specialist (EFPS)
4. Certified plyometric Specialist (CPS)
5. Sports Nutrition Work shop certification (SNWC)
6. Certified Total body Resistance Exercise Specialist (CTRXS)
7. Certified Mobility & Stretching. Manoeuvre Specialist.(CMSMS)
8. Certified Pilates Specialist (CPS)

Minimum age: Minimum: 18 years

Personal Attributes: The job requires individuals to have good communication skills, time management skills and ability to understand the body language of the trainees. The job requires individual to possess key qualities such as self-discipline, confidence, maturity, patience, compassion, active listening, time management, empathy, language proficiency.

Duration of course: Not less than 550 hours or not less than 6 months

Job Role: Personal Trainer, Fitness Trainer, Gym Trainer, Strength and Conditioning coach, Floor Manager.

Requirement/ Eligibility: For admission in the course it is suggested/desired that the candidate should have passed 12thstandard/Higher Secondary School Certificate from a recognized board or equivalent and candidate should have minimum two years working experience. Or NSQF L4 certification with three years of Experience.

Level: NSQF Level 5

Syllabus

Affiliation: SPFL-SC

Opportunities:

- Job Opportunities to apply abroad through REPS India and EREPS
- This certificate enables the trainers to register on the NSDC portal and Sportz Grid which will help them get employment in the industry both in India.
- This Course also qualifies the professional for Govt. Schemes to help them in securing easy loans so that they can start their own venture and become self-reliant.

Syllabus:

Syllabus: 1 NSQF Level 5: **Personal Fitness Trainer**

Syllabus: 2 MIHFM Personal Training Certification

Syllabus 2: MIHFM Personal Fitness Trainer

1. Advance Strength Training Course (ASTC)

- **Definition of strength, all factors of strength:** Strength is ability of body to contract its muscles with (maximum).
- **Methodology of strength training** : Definition and working procedure of absolute strength, limit strength, power (Starting strength, Explosive strength), anaerobic Strength, aerobic Strength (Linear Anaerobic/Aerobic Strength Endurance, Non-linear Anaerobic/Aerobic Strength Endurance)
- **Types of Strength:** specification of General strength, Specific strength, Special strength, Functional strength
- **The Strength Curve**: Training to improve Strength Curve
- **Weight Training**: Difference between training with Free Weights and Machines.
- **10 Principles of Strength Training –** To build strength or mass, we have to train specifically for strength or mass building. Working procedure with Principle of Individual Differences, Principle of Over compensation, Principle of Overload, SAID Principle, Use / Disuse Principle, Specificity Principle , GAS Principle – General Adaptation Syndrome ,Principle of Central Nervous Control ,FITT Principle, 5 Rs (ROM , resistance , reps , rest ,recovery)
- **Periodization of Strength training**: Periodization is most widely used in resistance program through Training cycle, Muscle Confusion, Progressive Overload, Holistic Training.
- Programming of exercise prescription: Introduction to exercise prescription: design to avoid over-training and to systematically alternate high loads of training with decreased loading phases to improve components of muscular fitness. Sets, Reps and Rest theory : application of Set system, Superset, Compound, Tri-sets, Giant Set, Staggered Sets, Rest-Pause, Muscle Priority, Pre-exhaustion, Pyramid, Descending Sets, Compensatory Acceleration, SOP of Exercise Prescription : activities necessary to prepare a good exercise chart.

- **Training for Muscle Mass** : Isolation, Quality training, Cheating, Continuous Tension, Forced Reps, Flushing, Burns, Partial reps, Retro-gravity, Peak contraction, Super speed and Iso-tension are few steps to achieve the goal of muscle mass.
- **Seven rules of Weight Training:** seven common rules which effect any strength training program, they are - Prevent Overtraining**,** Overreaching, Overtraining, Stressors, Environmental, Psychological – psychosocial, Physiological – biochemical**.**
- **Training Loads - How much weight should you lift?** Training load depends on Recovery time, Muscle fibers, Movement, Age, Sex etc.
- **Olympic Lifting : Clan, jerk, Snitch**
- **Lifting Mantras for Strength Training:** The top ten lifting Mantras for strength training that will make your training program much more effective are **Frequency of training**, **Number of Exercise** , **Same muscle group , Upper body & lower body , Total Body Work out , Variety in exercises** , **Opposing muscle group** , **Know your limit , Mental relaxation** , **Nutrition**
- **Glossary of Exercise**

2. Certified Kettlebell Specialist Level: 1 (CKBS L1)

- **History of this instrument:** The Kettlebell as Girya is a traditional Russian training tool that is used by people all over the world. It is as cast iron or cast steel weight, looks like a 'Ball' with a handle. Kettlebell used to perform ballistic exercise that combines strength, flexibility. Archaeological evidence shows that the Kettlebell used in ancient Greece. But Kettlebells were developed in Russia in the 1700s,
- **Benefits**: This form of exercise has many benefits like - cardio without the boredom, Combines cardio and strength training, fat loss, Women won't bulk up! Very much effective for them, Develop functional strength, Increase mental focus, toughness, explosiveness
- **Safety Consideration**: it is a high intense workout process with high velocity, so that we have to follow some safety measures - Get a doctor's clearance, Make sure that you have enough space to train, Proper dress up, Uses of weight lifting belt, Weight lifting shoes, etc.
- **Equipment:** Proper dress; sports or fitness, Weight lifting belt according to sports or general practice, Lifting shoes, Chalk, Kettlebell, Gloves, Wrist band
- **Type of Kettlebells:** according to programming we use different type of kettelbells.

  Cast Iron Kettlebells: Cast Iron bells are found in various shapes and sizes. The size will generally get bigger as one progress to heavier Kettlebells.

  Professional Kettlebells (competition bells): With profession grade Kettlebells, the dimensions are identical among all the different weights.

  Kettlebell classification according to weight and colour like 8kg bell pink colour, 12 kg bell blue colour, 16 kg bell yellow colour

- **Terminology in Kettlebell Sport:** in kettelebell sports there are some specific term like -

START: Kettlebells are lifted from the platform, GRIP: the way the handle of the Kettlebell is held, HAND INSERTION: Displacement of the hand into handle of the Kettlebell, SET: one or repeated performance of exercises, JERK: kettlebell jerked above the head to the straight arms. RACK POSITION: Elbow(s) are connected to an iliac cres, HALF-SQUAT (FIRST DIP): rapid flexion of the knees when performing the lift, UNDER-SQUAT (SECOND DIP): SNATCH: Kettlebell is swung above the head SWING: - pendulum like movement of the Kettlebell, FIXATION (LOCKOUT): CLEAN: Biathlon: The snatch and jerk are combined together in the biathlon event. **LONG CYCLE**: clean and jerk perform in every rep. PRESS: pressing bell from rack to overhead HOOK POSITION: gripping, Acceleration pull: puling bell for any lift Hand Switch etc.**, breathing pattern**: in kettlebell exercise we follow both Paradoxical breathing, Anatomical breathing pattern. **Process: Jerk:** - first the Kettlebell is cleaned to the chest and then jerked above the head to the straight arms. **Long Cycle**: Kettlebell sport competition that includes one exercise performed in three steps swing, rack, jerks **Snatch:** kettelbell lift from back swing to overhead.

- **Assistance Drills**: to improve main lifting we need few assistance exercises. like - Swing , Rack Position, Pressing, Lungs, Row, Turkish Get up, Windmill , Bottoms up, clean and press.
- **Programming**: how to design a workout programme.

3. Certified Functional Strength Training Specialist (CFSTS)

- **Meaning of FST: FST means Functional strength training**: Functional training - purposeful training of MOVEMENTS, not only for muscles. Functional Training is goal-specific training, not sport-specific. “FUNCTION” means Purpose. Goal. Objective. “FUNCTIONAL” has several meanings.

Designed for or capable of a particular function or use. For body awareness.

- **FST is NOT sports specific training, goal of FST**: FST is NOT sports specific training**.** It is sports general training
- **FST and daily life activity:** This type of exercises programming through body balance, unstable surface, asymmetrical resistance, full ROM. FST involves multi-joint movements involving multiple muscle groups.
- **FST helps teach client how to handle own bodyweight:** With maximum possible bio-mechanical efficiency under few circumstances like uneven surface training, lack of mobility or in full range of motion, variable resistance, etc.
- **Locomotion Chain and example:** Muscles do not contract (concentric contraction) or elongate (eccentric contraction) in isolation but work as a large interconnected system, Produce movement , Slow down then stop movement, Reverse movement. Movement at any joint is result of two phases

  Phase 1: all muscles lengthen / act eccentrically to decelerate joint flexion.

Phase 2: milliseconds later, the same muscles shorten / act concentrically to produce extension at the joints

- **Open and Closed Chain movement and exercises :**

  Open Chain: Mostly single joint movements.

  Closed Chain: To exercise the muscle as it will be used in real life, the foot must be in contact with a surface so that the Chain is closed.

- **Non-functional and Functional movement:** Functional Strength Training is good for learn how to handle body weight as resistance in different body positions, Instability and imbalance controlled and gradually increased to train body to regain, Multi-joint, multi-planar movements, etc.
  Non-functional and Functional movements have some difference also. Functions vary from joint to joint, Primary function of certain muscles / groups is Stabilization, Stabilization improved through simple exercises in small ROM etc.
- **General Fitness Assessment:** Body fat percentage, Body balance, Cardio vascular endurance, Limit strength, Flexibility test, Additional test.
- **Fitness Assessment - Functional Strength:** before starting any routine have to start with a assessment - Functional Upper Body Strength, Functional Lower Body Strength, Core Functional Strength.
- **Fitness Goals – types of fitness:** every training programme have a specific goal . Based on that training programme should be prepare - Limit Strength , Starting Strength, Explosive Strength, Static Balance, Dynamic balance, Agility, Flexibility, Strength Endurance, Local Muscular Endurance, Speed Endurance, Cardiovascular Endurance, Muscle Mass, (Low) body fat, Freedom from stress, Freedom from illness, Figure / shape of body.
- **Designing FST program :** key factors of programing - client goals, endurance , strength, 16 fitness goals , duration of (Macro cycle / Meso cycles / Micro cycles)
- **FST elements:** Stability (Swiss) Balls, Medicine Balls, Foam rollers, Resistance Bands, BOSU ("both sides up"). Wobble Boards and Balance Discs are equally effective, Agility Ladders, Hurdles, Cones, Steps or plyometric boxes, etc.
- **Developing Core Functional Strength:** Strengthen core – (abs, back, glutes and oblique's) is an important goal of FST program.
- **Developing Power with Plyometric:** all sports have its own requirement and specific movement.
  Starting speed, Acceleration, Directional change, Vertical Jumps, Horizontal Jumps are few of them.
- **Developing lower body strength & balance:**
- **Glossary of Exercises :**

4. Certified plyometric Specialist (CPLS):

- **History of Plyometrics:** Plyometric actually a form of **"**Jump Training**"** or "Stretch-shortening Cycle**" started** from 1980. 1980s – plyometrics applied to many sports and

Syllabus

games incl. basketball, volleyball, tennis, football, etc. In 1990s, Germany, Holland applied plyometric in field hockey. In mid-1980s, Indonesia, Sweden in badminton.

- **Definition:** Plyometrics -> plyo = increases / distances + metric = measurable => measurable increases (as a function of speed). Plyometrics essential for athletes who jump, lift, throw - require agility + power.
- **Physiology of Plyometrics:** Musculo-skeletal system provides movement, posture Muscles contract and stretch, eccentric, concentric, isometric, Extrafusal (standard muscle fibers that allow movement), Intrafusal (muscle spindles) are few basics but important thing.
- **Muscle Physiology in Training:** We should have few important information about muscle physiology like - **eccentric** contractions are immediately followed by concentric contractions, Nerve signals command immediate concentric contraction, Recovery or use of potential energy is partial, Plyometrics focuses on how to further shorten this amortization phase.
- AMORTIZATION PHASE (**Stretch-Shortening Cycle) :** Amortization originally called " Stretch-Shortening Cycle or SSC ". There are two physiological factors contribute to SSC – stretch shortening of muscle tissue.
  Muscle elasticity (stretching) is responsible for SSC generating more power than a simple concentric muscle contraction.
- **Factors responsible for SSC; Muscle elasticity, Stretch reflex:** the three factors are *Rapid* stretching, *Rapid* contraction, Stretch reflex.
- **Stretch or myotatic reflex** : Stretch or myotatic reflex responds to speed of muscle stretch

  Reason 1: direct connection from / to sensory receptors in muscles and cells in *spinal cord,*

  Reason 2: other reflexes are slower than stretch reflex. Faster the muscle stretch => greater the muscle contraction. Contraction = strength.

- **Power Training:** Scientific research shows that, Traditional way to improve Power – heavy weight training, plyometrics + dynamic weight training increases explosive power, Maximal power output, Advanced variation: 5-5-5 rules etc.
- **Training Technologies:** Few training procedure will help for better performance, we need dip knowledge about this like - Weight Training, Special LIGHT Resistance Training, Psychological Support, Medical Support, Diet Management, Nutrition and Supplementation, Alternative Therapies, Sport-specific Skills.
- **Flexibility:** Plyometrics demands flexibility which can be increased thru static and dynamic stretching
- **Anaerobic Training:** Plyometric training is anaerobic – in ATP-CP energy pathway.
- **Power Training Considerations:** Improvement of **Power** training always depend on these factors - Physiological, Physical, Mental, Environmental, Medical**.**
- **Energy Metabolism:** 4 types of physical activity according to energy systems used, they are - Strength Power, Sustained Power, Anaerobic Power Endurance, Aerobic Endurance.
- **Types of muscle fiber :** There are two types of muscle fibers –
  Fast twitch - Contract quickly. Explosive – high intensity, short duration workloads. Recruited in large numbers only for strength / power demand. Exhaust quickly.

Slow twitch - Steady, low intensity, rhythmic, repetitive contractions for endurance workloads .

- **Muscle roles :** In every movement or any work , attached muscle or muscle group have few activity individually or in a group - Prime Mover , Assistant Mover , Antagonist , Stabilizer , Synergists **.**
- **Strength Categories:** Through plyometric training we get also benefitted of our certain goal like - Limit Strength, Absolute strength, Speed Strength, Anaerobic Strength, Aerobic Strength, Traditional Strength Classification. We should learn this method to input members training exercise program.
- **The Strength Curve: R) Equipment :** equipment use in plyometric training program **-** Cones 8 to 12 inches high , Boxes/steps 6 – 12 – 18 – 24 – 30 – 36 inches high, Hurdles/barriers 6 – 12 – 18 – 24 – 30 – 36 inches high, Stairs – staircase or steps in stadium or building, Medicine Balls 5 lbs ++, Angled boards, BOSU, Trampolines, Swiss Balls, Adjustable Ladders, Wobble Boards, Skipping Ropes, Dynamic / Resistance Tubes, Reaction Balls etc.
- **Training Eligibility:** For Safe and scientific FITNESS ASSESSMENT, we need – analysis of fitness levels, medical condition, fitness goals, sport specific information, biomechanical skills, needs.
- **Skills developed through Plyometrics:** plyometric is a very goal specific training program - Starting speed, Acceleration, Directional change, Vertical Jumps, Horizontal Jumps etc.
- **Plyometric Program Design:** process of programming for individual or game specific group training.
- **glossary (exercises name) :**

5. Sports Nutrition Workshop Certificate (SNWC)

- **Nutrients an Overview:** Macronutrients, Micronutrients
- **Digestion and Absorption:** Digestive procedure is Mouth, Esophagus, Stomach, Small Intestine, Large Intestine and Rectum, Pancreas, Liver and Gall Bladder, Hunger Pangs, Digestive Supplements AIDS, Fibber and Digestion.
- **Body Composition and Metabolism:** Body composition assessment, Overview of metabolism, metabolic set point, Food and Metabolism, Environment and Metabolism, Exercise and Metabolic responses, Glycogen depletion and Metabolism of Fatigue, Motoring your Metabolism.
- **What is sports Nutrition**: Definition of Sports Nutrition. How nutrition improves performance , About the RDs, ODs, PDIs, Understanding Food and Supplement labels, New food labelling regulation in India, FASSI, Food Versus Supplements, Why take supplements, major categories of sports supplements,
- **Nutritional ergogenic aids:** Five ergogenic aids, Most common ergogenic aisd, Benefit of ergogenic aids,
- **Know the limits :** WADA,NADA,FASSI, MOU between FASSI and MYAS, Anabolic steroid Act in India, Anabolic steroid and its side effects

Syllabus

6. Certified Total Body Resistance Exercise Specialist (CTRXS):

- History: In 1997, TRX was invented by a US Navy SEAL using only a jiu-jitsu belt and parachute webbing.
- DESCRIPTION: TRX is a form of suspension training that utilizes body weight as the resistance. TRX training can be used to improve strength, core stability, balance, and flexibility.
- Instrument: This is accomplished with the help of heavy-duty adjustable straps attached to an anchor point to help hold your weight.
- Biomechanics and Kinesiology of TRX: Muscles are attached to bones via tendons and the bones of the skeleton behave as levers which muscles pull on to create movement.
  In a second class lever system, the load is the middle component and lies between the fulcrum and the effort.
  The majority of movements in the human body are classified as third-class lever systems.
- Mechanism of TRX :
  A) Mainly nine Types of TRX Exercises:
  Plank, Pull: rows and curls, Push: triceps extension position, flying, Squat: plyo squat and pistol types ,Lunge: TRX is excellent equipment for helping the lunge pattern ,Hinge: hinge to press are excellent two types movement ,Hamstring : hip hinge and thrusts are excellent with trx, Lateral Flexion: side bends types exercises ,Core Flexion: sit-ups / crunches / jack knife (supine and pronated both position).

- **Holding Positions of the TRX**: Every exercise has exactly one position from which the exercise can be performed.
  Standing Facing, Standing Facing Away from gripe, Ground Facing, Ground Facing Away from gripe, Standing Sideways Ground Sideways

- **Adjustment of trx Lengths:** Performing the TRX exercises properly requires one to properly adjust the strap length. They are - Over shortened: Fully Shortened: Mid Length: Mid-Calf Length: Fully Lengthened:

- **According to length TRX Suspension Trainer Techniques:** Shorten the TRX Suspension Trainer, Lengthen the TRX Suspension Trainer, Single Handle Mode, Heels In the handle, Toes In the handle

- **Contraindication of TRX movements:** like other equipment TRX training also have few contradiction, Starting incorrectly, The TRX is dynamically scalable, The straps should never touch or scrape against your arms. ETC.
- **Application and benefits of TRX exercise:** TRX workouts are for everyone, TRX straps help you modify and progress workouts, With the TRX, you're always working your core, TRX training research shows there is less potential for injury compared, Research shows a similar growth hormone response during and after workout, Research proves greater testosterone to cortisol ratio, You can hang your TRX over your door at home or at a hotel 8) Get more results in less time. TRX is not very costly also.
- **Glossary of TRX exercise** (125 types exercises) :

15 TYPES OF PLANK: TRX Planks Scapula stabilization, Plank on Elbows Plank on Hands, Plank Single Leg, (Supine) Plank on elbows ETC.

25 TYPES OF PULL (ROW AND CURL): TRX Rows, High Row, Mid Row Mid Row (unstable surface), Mid Row (single leg) ETC.

20 TYPES OF PUSHING EXERCISES (TRICEP EXTENSION POSITION): Push up, Push up (cross gap hand), Push up (hand gap variation), Jump push ups, Walking push ups, Push ups (single leg), RX Presses ETC.

12 TYPES OF FLY MOVEMENTS: Chest Fly, Chest Fly one arm, Chest Fly one leg, Chest Fly to press, Chest press to Fly ETC.

10 TYPES OF SQUATS: TRX Squat, Squat, Squat Jump, Squat Jump (with rotation), Pistol Squat ETC. 5)

11 TYPES OF LUNGES TRX Lunges, TRX Split Squat, Side Lunge, TRX side Split Squat, Step reverse Lunge ETC

7 TYPES OF HINGING MOVEMENT: Pelvic raise, One leg pelvic raise, TRX Hinges ETC
HAMSTRING EXERCISES: TRX Hamstring Curls, Hip thrust to stand ETC.

6 TYPES OF LATERAL FLEXION (SIDE BEND TYPES), TRX Rotations, Torso Rotation, Resisted Rotation

16 TYPES OF CORE EXERCISES : SIT UPS, CRUNCHES ETC (SUPINE / PRONATED BOTH SIDE) Kneeling Oblique Rollout, Mountain Climber, Mountain Climber (both leg)Mountain Climber (cross leg) Jack knife ETC.

7. Certified Pilates Specialist (CPS)

- **History**: Pilates was developed by Joseph Pilates, from Germany. Pilates claims that the exercises could cure ill health. It is also related to the tradition of "corrective exercise" or "medical gymnastics".
  Eventually Pilates designed other apparatus, including the swis ball, Cadillac, Chair, Spine Corrector, Ladder Barrel and Pedi-Pole etc
- **Description:** Pilates originally means "Contrology," It is a method of whole body exercise designed to improve daily activities and livelihood. If practiced with consistency, Pilates improves flexibility, builds strength and develops control and endurance in the entire body. It puts emphasis on alignment, breathing, developing a strong core, and improving coordination and balance
- **Equipment :** The two most popular Pilates equipment are - Yoga mat and Gym ball **Comparison with yoga :** Pilates, is a mind-and-body discipline, though yoga are more likely to address spiritual aspects explicitly although Some poses are similar in the two disciplines
- **Pilates with Yoga mat exercises : Glossary:**
- **Pilates with Gym Ball:** Stability balls are a popular and versatile piece of fitness equipment used in gyms, homes, and rehab therapy sessions.

- **Use of gym ball (GYM BALL SIZE):** Use of gym ball is to warm up and stretch your muscles before a workout. Improved flexibility can reduce risk of injury and keep your muscles and joints functional.
  Gym balls can strengthen the core.
  Gym ball size according to height of users e.g. 45 cm Gym ball is good for under 5 ft height person.
- **Gym ball exercises : (55+ Gym ball exercise)**

  1) Standing position: squats against the wall, single leg squats against the wall, lunge against the wall, heel raise, hip hinge etc.

  2) Seated position: pelvic tilt, lateral pelvic tilt, single leg balance and leg extension, alternative hand and leg raise, adductor squeeze etc.

  3) Supine on ball position: abdominal crunch (variation), bridge, bridge single leg balance, lying chest stretch, abdominal stretch etc.

  4) supine on the floor : hip extension, bridge leg curl, glute stretch, butterfly stretch etc.

  5) prone position:jack knife,superman variation,push ups,back extension variation ,leg hip extension (lower back) etc.

  6) kneeling position:lat stretch,quadriceps stretch,chest stretch etc.

  7) side lying position:lateral torso extension / flexion,hip abduction on ball etc.

- **Benefits :** pilates increases core strength, pilates decreases back pain , Pilates strengthens your bones , Pilates improves flexibility and mobility , Pilates improves posture and It enhances body awareness , Pilates increases energy , decreases stress and improve motivation , Pilates boosts your immunity , Pilates improves cognitive functioning ,Pilates enhances sports performance , Pilates can help reduce menstrual pain etc.

8. Certified Fitness Physiology Specialist (CFPS)

- **Understanding of temperament and personality of the client:** Understanding of temperament and personality will help trainer to set goal of a client, Understanding of the big 5 factor of personality.
- **Fitness goal setting according to temperament & personality of participant:** Principles of SMART goal **Performance** goal, Process goal, Outcome goal.
- **Client motivations techniques:** Extrinsic Motivational techniques, Intrinsic Motivational techniques
- **Proper communication techniques in realm of Fitness Industry** : Analytical Communication, Methodical Communication, Fact retention communication
- **Concept of Placebo& Nocebo** **:** Verbal , Action and Social placebo effect, Detrimental Nocebo effect on health

9. Certified Mobility & Stretching Manoeuvre Specialist (CMSMS)

- INTRODUCTION:

DEFINITION OF FLEXIBILITY: Flexibility relates to Range of Motion (RoM) of and at a specific joint with regard to a particular Degree of Freedom.

- Name of movement : Flexion ⇔ Extension, Internal Rotation ⇔ External Rotation,Abduction ⇔ Adduction,Traction ⇔ Approximation,Protraction ⇔ Retraction,Inversion ⇔ eversion,**Varus ⇔ Valgus,**Pronation ⇔ Supination,Anterior Gliding ⇔ Posterior Gliding (rocking),Medial Gliding ⇔ Anterior Gliding (rocking)
- **Techniques to increase Functional Range of Motion (FROM)**: few techniques are Modification of neuromuscular processes that regulate tension and length of the tissues in the muscle complex. Increase of length and strength of other soft tissues of the muscle complex, particularly the collagenous tissues like the fascia. Lengthening and shortening of the other soft tissues, particularly those in the joint capsule and ligament.
  Restructuring the articular surfaces of the joints, as a natural result of many years of regular, heavy loading in specific movement patterns.
- **REQUIREMENTS OF GENERAL FITNESS AND SPORTS:** The real-life requirement is active flexibility. passive flexibility may, at best, provide a protective reserve – insurance – in the even a joint is unexpectedly stressed beyond its regular operational range of movement.
  Sporting prowess (quantified in terms of competition success) correlates more strongly with active rather than passive flexibility.
- **EFFECTS OF STRETCHING :** Optimize the athlete's learning, practice and performance of many types of skilled movements, Increase in range of useful movement , Increase in the level of biomechanical skills and musculoskeletal efficiency**,** Enhances awareness of the body , Decrease in risk and occurrence of injury etc.
- **BODY RESPONSE TO STRETCH** : The Muscular and Skeletal Systems are relevant to us in the context of Strength Training and Development. Bones make up the specialised support arrangement for the human skeleton.
- **NEUROMUSCULAR SYSTEM AND FROM :**

  FROM is not only influenced by the musculoskeletal structure and the mechanical properties of their soft tissues but also by the level of MOTOR UNIT ACTIVITY in the relevant muscles,

  The muscles and tendons have a large number of two receptors,

  Involuntary reflexes are initiated by the action and interaction of the MS and GTO during muscle movement in the following manner

- **The stretch reflex or, the myotatic reflex :** different type of stretch reflex -

Syllabus

- Dynamic or phasic stretch reflex, Static or tonic stretch reflex, Negative stretch reflex. **COMPONENTS OF JOINT FLEXIBILITY:** Any joint flexibility (or, stiffness) is influenced by the soft tissues connected to the joint. The components are - Muscles and their fascial sheaths, Structure of the joints, including ligaments, Skin, Tendons and their sheaths etc.
- **Factors of Flexibility**: Flexibility depends upon few factors like - Exercise and training history , age , gender , temperature , types of join , types of movement .
- **Soft Tissue Biomechanics and Flexibility** : Different methods are required for conditioning muscles, tendons and other soft tissues, Slow twitch muscles have higher proportion of connective tissue than fast twitch muscle groups, Higher stiffness and low level of strain of slow twitch muscles is most suitable for continuous support of posture , Different mechanisms in brain and spinal cord control high speed, low speed and topological patterns of muscle activity , Different rates of loading and stretching have different effects on bone, tendon and muscle etc.

- **Stretching technique** : There are two types of stretching -

  a) static stretching - Free Static Stretching, Passive Stretching .

  b) dynamic stretching - Ballistic Stretching , Active Stretching , Proprioceptive Neuromuscular Facilitation (PNF) Stretching , Plyometric (Impulsive) Stretching

- **Flexibility measurement technique** : For every exercise prescription we need few measurement or result - Sit and Reach Flexibility Test , Chair Sit and Reach Test , Floor Touch Test , Groin Flexibility Test , Calf Muscle Flexibility Test , Trunk Rotation Test , Shoulder Flexibility Test etc

- **Stretching glossary (muscle and joint)**: Knowledge of muscle and joint actions will enable more “accurate” stretching. a list of muscles to be stretched and the actions that will enable the stretch

.