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Stretching exercises

تمارين التمديد

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Abstract

Stretching exercises are physical exercises which used in many fields to increase flexibility and range of motion , different types and methods of use "static stretching, dynamic, ballistic and PNF exercises which are part of warming up and cooling down, during training or competition.

Keywords

Warm up ;
Flexibility ;
Stretching exercises.

المخلص

تمارين التمديد هي تمارين بدنية تستخدم في العديد من المجالات لزيادة المرونة وسعة الحركة، تختلف أنواعها وطرق استخدامها منها تمارين التمديد الثابت، الديناميكي، الباليستي وتمارين PNF التي تعد جزء من الإحماء والتهدئة سواء خلال التدريب أو المنافسة .

الكلمات المفتاحية

الإحماء؛
المرونة؛
تمارين التمديد .

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1. Stretching

Is a form of physical exercise in which a specific muscle or tendon (or muscle group) is deliberately flexed or stretched in order to improve the muscle's felt elasticity and achieve comfortable muscle tone, The result is a feeling of increased muscle control, flexibility, and range of motion. (Nikita Joshi and al, 2017, Pg 457)

2. Importance of stretching

- Stretching is a common activity used by athletes, older adults, rehabilitation patients, and anyone participating in a fitness program. (Phil page ,2012, Pg 109)
- Stretching is an important therapeutic and exercise training modality. (Duane Knudson-2006, Pg 3)
- Stretching is the key element of both rehabilitation programmers and sport-related activities in order to restore optimum muscle length.(Yildirim MS et al, 2016, Pg 89.)
- Stretching is a fundamentally important part of sport and exercise, playing a role in improving performance, and prevent injury and rehabilitation (David G. Behm,2019,Pg 02)

3. Stretching types

- stretching is used to enhance the range of motion (ROM) about a joint (flexibility). There are various techniques of stretching, such as static, ballistic, proprioceptive neuromuscular

facilitation, and dynamic stretching. (Amiri khorasani et al-2010, Pg 2698)

- the three most common variations of stretching techniques are (i) dynamic (ii) static and (iii) proprioceptive neuromuscular facilitation (PNF). (Woods et al, 2007, Pg 1090.)

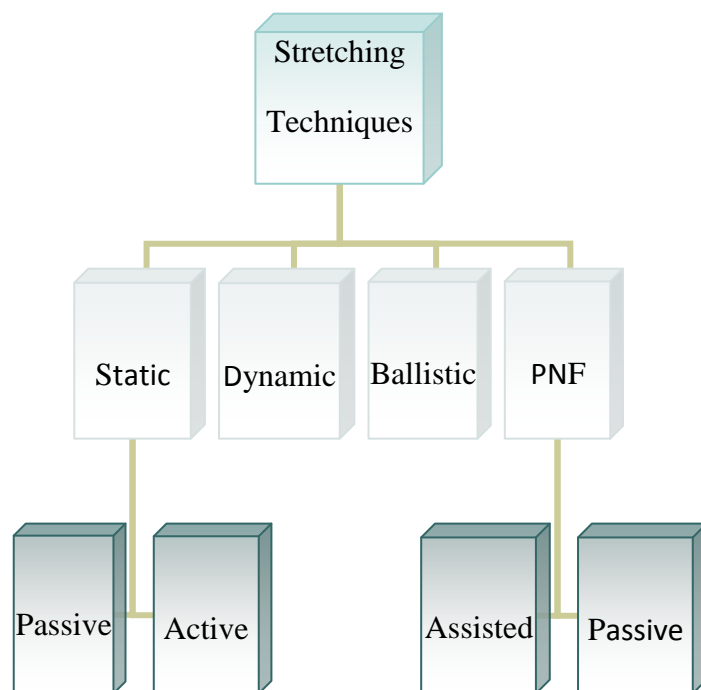


Figure 01 : *Stretching Techniques* (Mackenzie Kiel, 2019, Pg14)

Static stretching

- Static stretching is one of the safest and most commonly performed stretching methods used to increase muscle length. This type of stretch is applied slowly and gradually at a relatively constant force to avoid eliciting a stretch reflex. (Evan Peck et al,2014, Pg 179)

- Static Stretching is the most well known forms of stretching "Blahnik, 2013". It occurs when an individual moves his/her body in such a way that a muscle is slowly elongated and then held in that position for a period of time. For example, to statically stretch the hamstrings a seated person with legs straight can bend at the waist and reach for the toes. The individual holds the position for a length of time, usually between 15 and 60 seconds (Cassandra Bernhart 2013, Pg 9)
- Static stretching involves holding a stretch position for a period of time with little on movement, it has been the most commonly used program of athletes and coaches. (Douglas mann and Charles whedon. 2001 , Pg 10)

Dynamic Stretching

- Dynamic stretching involves moving the limb repeatedly through its fullest range of motion by gradually increasing distance and speed of movement (Jefferey Christopher Murphy, 2008, Pg 2)

Ballistic Stretching

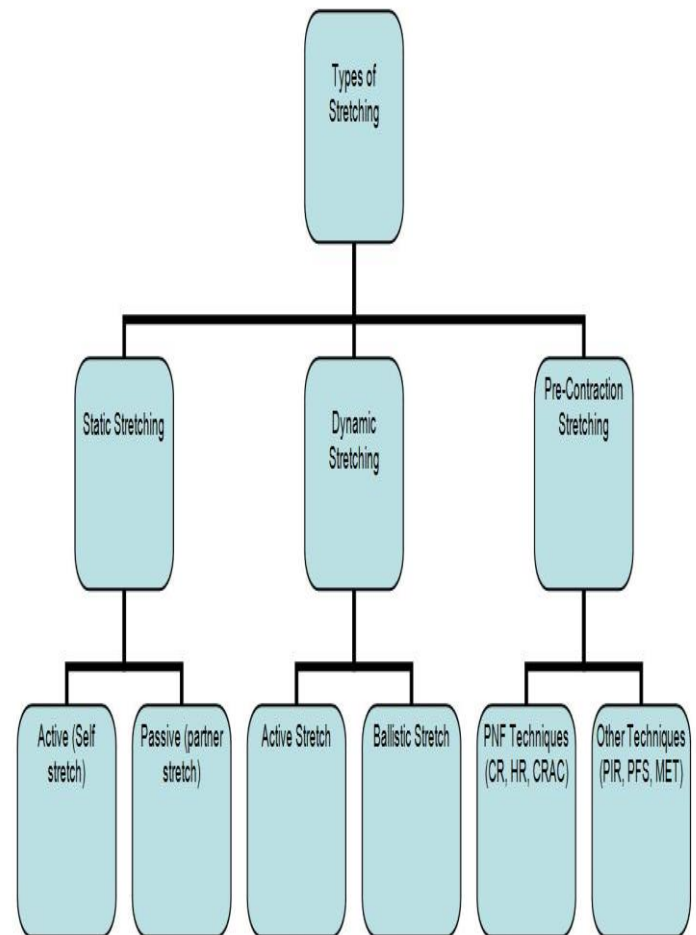
- ballistic stretching is a technique that involves a bouncing or bobbing motion during a stretch (Cassandra Bernhart, 2013, Pg 18)

PNF stretching

• Proprioceptive Neuromuscular Facilitation (PNF) includes four different types of stretching techniques. These combine muscle contraction and relaxation in order to relax an overactive muscle and/or enhance the flexibility of a shortened muscle. PNF was developed by Herman Kabat MD, PhD, Margaret Knott PT and Dorothy Voss PT in the 1940s to treat paralysis patients. Over the years, other forms of PNF were developed for the treatment of orthopedic, as well as

neurologic, disorders. (Charles De Francesco and Robert Inesta, Pg 129)

CR= Contract Relax HR= Hold Relax CRAC= Contract Relax Agonist Contract PIR= Post isometric Relaxation PFS= Post-



Facilitation Stretching MET= Medical Exercise Therapy

Figure 02: Types of muscle stretching. (Phil page .2012 . Pg 111)

4. Stretching to improve flexibility and ROM

- Flexibility is an intrinsic property of the body tissues that determines the range of motion achievable without injury at a joint or group of joints. There are several methods of stretching aimed at improving flexibility like passive, static, isometric, ballistic and proprioceptive neuromuscular facilitation (PNF))G. Gremion: 2005,p6(, What is the best way to develop flexibility? This is a question

most coaches would like the answer too (V. Uzunov: 2008, Pg 6)

- Passive and PNF techniques require a second person with specific skills. PNF techniques might increase the risk of injuries because of the resulting increase in stretching tolerance. That method is the most effective to improve the range of motion Static stretching is the easiest and the most frequently used method (G. Gremion: 2005, Pg 6)
- Studies have proven that PNF stretching is superior to all other methods for increase ROM (Jason reed jagers , 2006, Pg 10)

5. Stretching and warm up

Is stretching beneficial to athletes when performing explosive type activities? This question has become a hot debate topic among physical trainers over the past years, The warm-up prior to the performance of physical activity is widely accepted as a contributor to achieving maximal muscular power production, and ultimately, optimal athletic performance (Amruta Balkawade, DeepaliHande , 2016, Pg 13)

Static stretching and warm up

- Recent studies have shown a negative effect of pre-participation stretching on sport performance. These negative influences concern performance in speed (running economy), in strength(strength deficit up to 1 h), and especially in jump) G Gremion: 2005, Pg 6) some researchers suggested that players should not use static stretching before activities that depend of high levels of strength and power (abbasfatahi and Amirri khorasani ,2012, Pg 484)

Static Stretching Before Activity:

- Decreases Muscle Strength
- Reduces Power
- Impacts Balance
- Impacts Reaction

- Impacts Sprint Performance (George T ,2016, Pg 4)

Dynamic stretching and warm up

- Moran et al. found that dynamic stretching prior to golf improved club head speeds and ball speeds. (Evan Pec et al: 2014, Pg 182)
- Dynamic stretching during warm-ups, as opposed to static stretching or no stretching, is probably most effective as preparation for the high-speed performances required in sports such as soccer (Thomas little and alun g Williams.2006, Pg 206)

- Ballistic stretching has also been shown to have no significant effect on performance. A study investigating vertical jump after ballistic stretching showed no significant difference in vertical jump height from not stretching. (Cassandra Bernhart 2013, Pg 19).

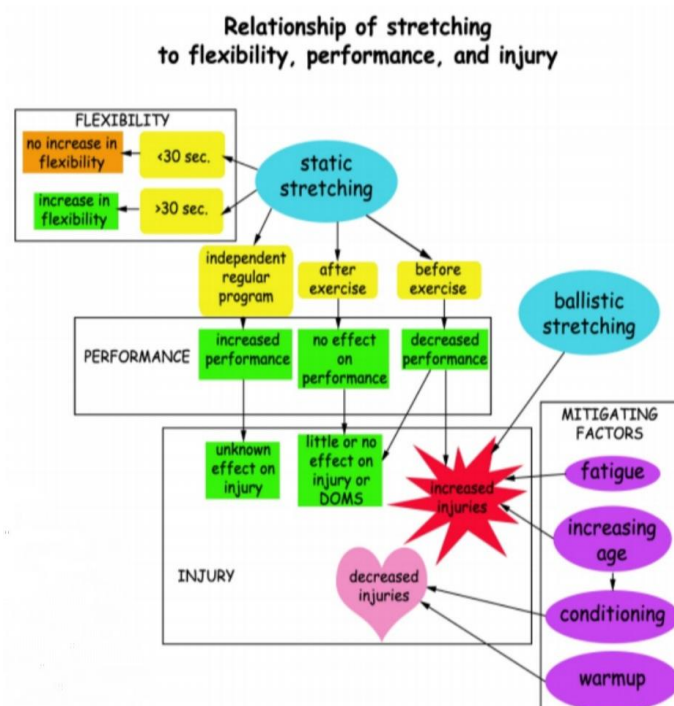


FIGURE 02: Relationship of stretching to flexibility, performance, and injury (Mackenzie Kiel, 2019, Pg14)

Conflict of interest

The authors declare that there is no conflict of interest

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