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Warm Up and Flexibility

Performing a warm up activity and taking time to stretch are often overlooked in today's fast paced life. But they should be performed just as often as your cardiovascular, cardiorespiratory and strengthening exercises to increase your overall performance and decrease your risk of injury.

Below are some guidelines that may be helpful in maintaining a regular routine and understanding the difference between the two:

Warm up facilitates our bodies from rest to exercise by stretching postural muscles, increasing blood flow, elevating body temperature, increasing available oxygen and increasing metabolic rates. There is also biomechanical evidence of decreased risk of injury due to increasing connective tissue pliability, improving joint range of motion (ROM) and function, and increasing muscular performance by 3-9%. It may also decrease the risk of a sudden cardiac event following sudden strenuous exertion.

There are two types of warm ups that may be performed prior to exercise or stretching.

1. **Active warm up -**
This is a low intensity movement performed for 5-10 minutes prior to exercise emulating actual movements of the sport or exercise to follow. For example, a runner might perform light jogging in place, jumping jacks or walking lunges.

2. **Passive warm up –**
This includes external heat sources such as a heating pads, ultrasound and whirlpools usually applied to an area of stiffness or soreness with the goal of improving tissue pliability prior to manual or instrument assisted (Graston technique) soft tissue mobilization or massage.

Flexibility is defined as "the intrinsic property of body tissues which determines the range of motion achievable without injury at a joint or series of joints". A proper stretching routine following warm up and exercise further increases overall performance and decreases risk of injury. Ideally stretching should follow the guidelines below:

- Precede stretching with a warm up.
- Complete a routine that focuses muscle groups with reduced ROM.
- Perform the routine at least 2-3 days per week, but more ideally 5-7 days per week.
- Stretch to the end ROM with mild to moderate tightness, but without pain or discomfort.

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- Hold for 15 to 30 seconds.
- Perform 2 to 4 repetitions for each stretch.

There are three types of stretching that we recommend to improve overall flexibility.

1. Static –
This type of stretching can be used **pre and post-exercise** and involves slowly stretching a muscle to its end ROM when tightness is felt and holding for 15 to 30 seconds. For example, lie on your back with one knee bent and the foot flat, and place a long towel or belt around the bottom of the opposite foot and hold with both hands. Keep your knee straight on the leg with the towel/belt and gently pull the leg up towards until mild to moderate tightness is felt in hamstring and behind the knee. Static stretching has been proven to increase flexibility acutely, but requires frequent performance as stated above to elicit long-term gains and regression back to baseline. This type of stretching has the lowest injury risk, and therefore is recommended for all populations.

2. Dynamic -
This type of stretching is commonly used as a follow up to warm up to further decrease your risk of injury **prior** to performing exercise. It is a moving type of stretch in which a muscle is taken to its maximum available range of motion (not beyond the available ROM determined in a static stretch as described below) and is quickly released back to its resting position. For example, perform the hamstring stretch as described above, but once a mild to moderate stretch has been felt in the hamstring and behind the knee, relax back to the starting position and repeat.

3. PNF (proprioceptive neuromuscular facilitation) -
This type of stretching involves a combination of alternating contraction and relaxation of both agonist and antagonist muscles through a series of motions. For example, PNF for the hip rotators would involve lying on your back and pulling one knee with both hands towards the opposite shoulder until a mild to moderate tightness is experienced. Then, you would push that same knee out into your hands while resisting the motion (not allowing actual movement of the knee/leg) for 5 seconds. Last, relax the knee/leg and pull the knee further towards the opposite shoulder to its new end ROM until tightness is experienced.

References:

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