



# انعطاف پذیری

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 @dr.fashi



# انعطاف پذیری



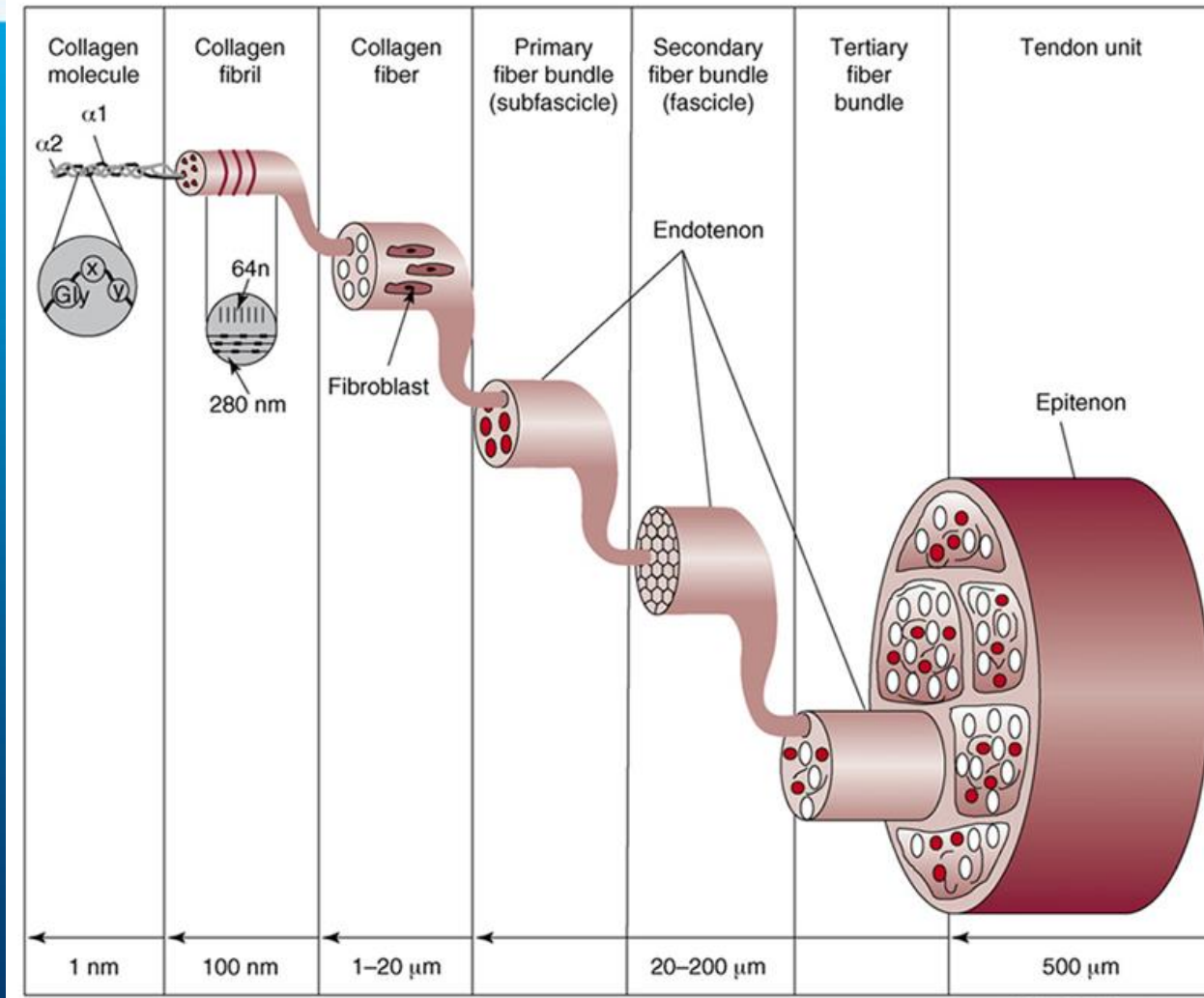


- قابلیت یک مفصل یا گروهی از مفاصل برای حرکت در سراسر دامنه حرکتی بدون ایجاد آسیب.
- افزایش کارایی حرکت
- کاهش احتمال آسیب
- افزایش خونرسانی مفصل
- افزایش هماهنگی عصبی عضلانی
- کاهش احتمال آسیب های ناحیه کمر
- بهبود تعادل





the number, size and orientation of the collagen fibres, as well as their thickness and internal fibrillar organization determine the strength of a tendon



# Internal Factors

- The type of joint
- Elasticity of muscle tissue
- Bone structure
- Elasticity of tendons and ligaments
- Temperature of joint and associated tissue



Hinge joint

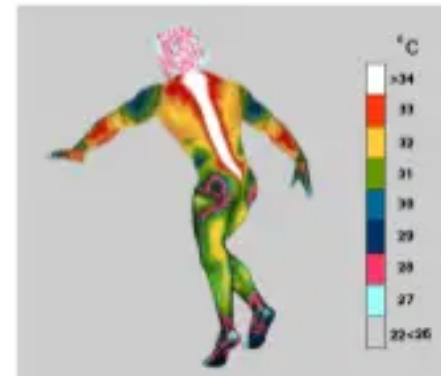


Ball and socket



# External Factors

- the temperature of the place
- the time of day
- one's commitment to achieving flexibility
- age
- gender
- restrictions





# Static Flexibility



## Active flexibility

- More closely related to sports specific
- Difficult to develop
- Requires muscle strength

## Passive flexibility

- Easier to perform
- Beneficial for cooling down

## Static stretching

- it is safe and doesn't require the use of equipment.
- Movements are smooth and are preformed slowly







# Advantages and Disadvantage of Static Stretching

## Advantages

- ☺ It is safe and unlikely to cause injury
- ☺ It overcomes the stretch reflex
- ☺ Decrease the severity of D.O.M.S

## Disadvantages

- It doesn't increase flexibility through full range of movement
- takes time





# Examples of Static Stretching



**Calves**



**Hamstring**



**Trapezius**



**Biceps**



**Quadriceps**



**groin**



**Triceps**



# Dynamic Flexibility

- involves moving parts of the body and gradually increasing reach, speed of movement
- performed in 8-12 repetitions
- also referred to as ROMS- range of motion.
- It stretches the muscle groups that cross over joints
- Suited for:
  - Dancing
  - Swimming
  - Aerobics



# Advantages and Disadvantage of Dynamic Stretching

## Advantages

- Stretches the major muscles that cross the joint
- Stretches through full range of movement

## Disadvantages

- May not stretch sport specific muscle groups





# Ballistic Flexibility

## Violent ballistic stretching can cause:

- Micro tears in muscle fibres
- Weakening the tissue
- In worst cases rupturing muscles tendons

•can form the third stage of warm up

- It should be controlled and executed rhythmically to avoid jerky actions and excessive momentum at the end point of the stretch

• involves repeated movements such as swinging and bouncing to gain extra stretch



# Advantages and Disadvantage of Ballistic Stretching

## Advantages

- ⊕ Similar in its speed and body movement to the actual sporting activity

## Disadvantages

- it can cause injury
- extensive use will decrease flexibility



# Examples of Ballistic Stretching







## P.N.F Flexibility

- progressive cycle incorporating a static stretch, an isometric contraction and a period of relaxation in the lengthening position, following another static stretch
- useful in rehabilitations programs
- P.N.F stretching is based on two guiding principles
- watch for pain quivering muscles and tension



# Advantages and Disadvantage of P.N.F Stretching

## **Advantages**

- Develops a range of motion
- Assists in rehabilitation

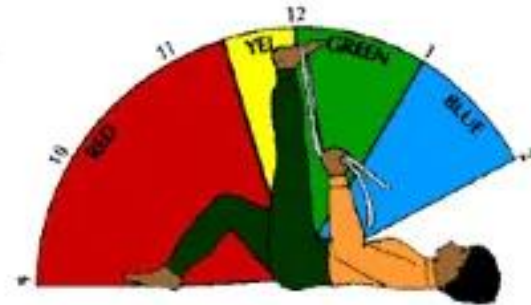
## **Disadvantages**

- requires the help of a partner who understands what to do



# Examples of P.N.F Stretching

Range	Position on Clock	Degree of Range of Motion
Red Range Toe Light	9:00-11:30	0°-75°
Yellow Range Normal	11:30-12:00	75°-90°
Green Range Elite athlete	12:00-1:00	90°-120°
Blue Range Hypermobile	1:00-2:00	120°-150°





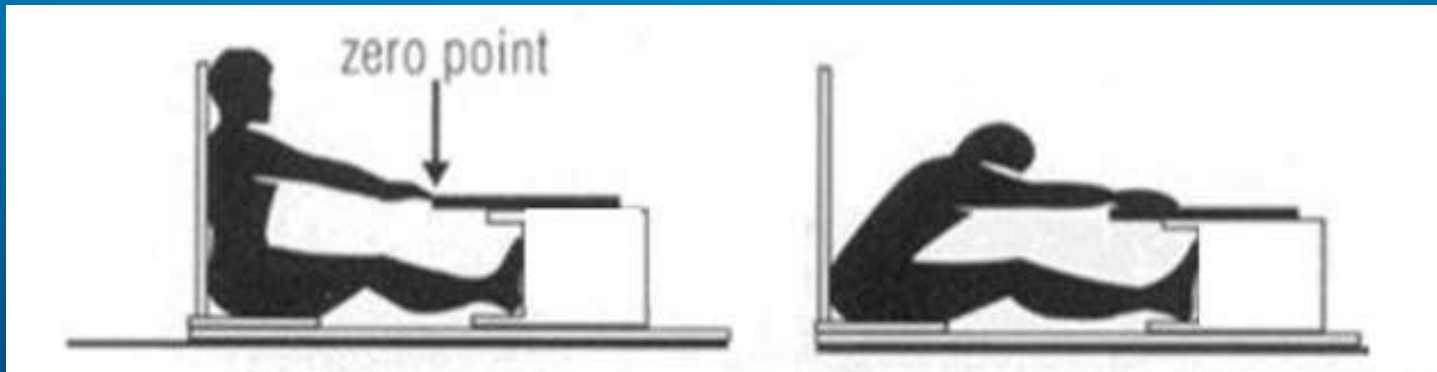
# مایعات و انعطاف پذیری

## Indicators of Body Composition

Indicators	Results	Ideal Range	Condition Judgement				
			Lower	Low	Normal	High	Higher
Weight(kg)	40.7	41.1 □ 53.1	[Progressive bar chart showing 40.7 is below the ideal range]				
BMI(kg/ m <sup>2</sup> )	18.3	18.5 □ 23.9	[Progressive bar chart showing 18.3 is below the ideal range]				
TBF%	6.1	11 □ 22	[Progressive bar chart showing 6.1 is below the ideal range]				
VFI	2	2.1 □ 9	[Progressive bar chart showing 2 is below the ideal range]				
TBW%	55	50 □ 70	[Progressive bar chart showing 55 is within the ideal range]				
SM%	41.3	35 □ 49	[Progressive bar chart showing 41.3 is within the ideal range]				
BMC(kg)	2.1	2.2 □ 2.8	[Progressive bar chart showing 2.1 is below the ideal range]				
BMR (KCal/d)	1195	1395 □ 1782	[Progressive bar chart showing 1195 is below the ideal range]				

## Indicators of Body Composition

Indicators	Results	Ideal Range	Condition Judgement				
			Lower	Low	Normal	High	Higher
Weight(kg)	57.5	48 □ 62	[Progressive bar chart showing 57.5 is within the ideal range]				
BMI(kg/ m <sup>2</sup> )	22.1	18.5 □ 23.9	[Progressive bar chart showing 22.1 is within the ideal range]				
TBF%	21.3	11 □ 22	[Progressive bar chart showing 21.3 is within the ideal range]				
VFI	6.3	2.1 □ 9	[Progressive bar chart showing 6.3 is within the ideal range]				
TBW%	45.7	50 □ 70	[Progressive bar chart showing 45.7 is below the ideal range]				
SM%	30.3	35 □ 49	[Progressive bar chart showing 30.3 is below the ideal range]				
BMC(kg)	2.5	2.2 □ 2.8	[Progressive bar chart showing 2.5 is within the ideal range]				
BMR (KCal/d)	1347	1395 □ 1782	[Progressive bar chart showing 1347 is below the ideal range]				



	مردان (سانتيمتر)	زنان (سانتيمتر)
عالي	> +٢٧	> +٣٠
خيلى خوب	+١٧ تا +٢٧	+٢١ تا +٣٠
خوب	+٦ تا +١٦	+١١ تا +٢٠
متوسط	٠ تا +٥	+١٠ تا +١
بد	-١ تا -٨	-٧ تا ٠
ضعيف	-٩ تا -٢٠	-٨ تا -١٥
خيلى ضعيف	< -٢٠	< -١٥





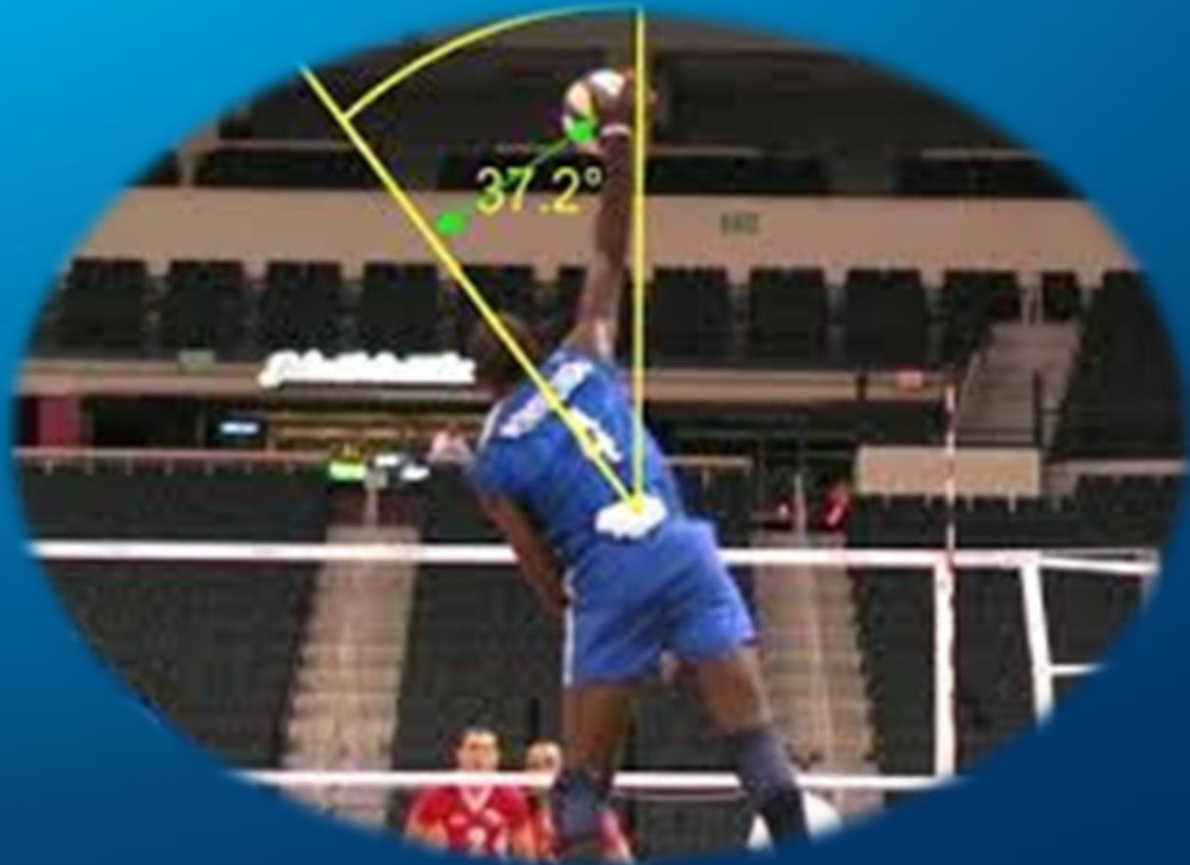
## CASUS: MECHANICAL SPECIFICITY (SKI)



# Which muscles do what when we ski?



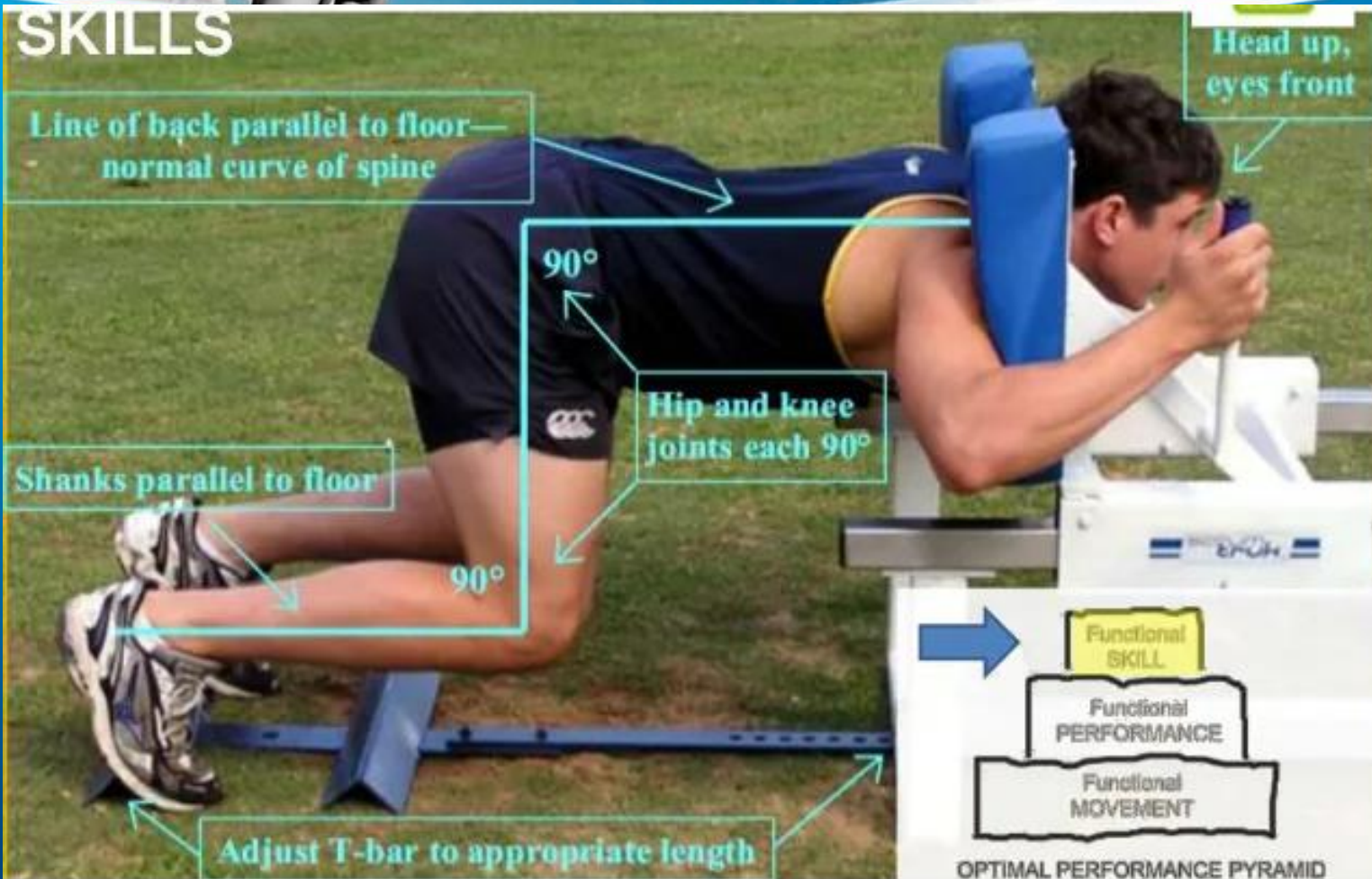


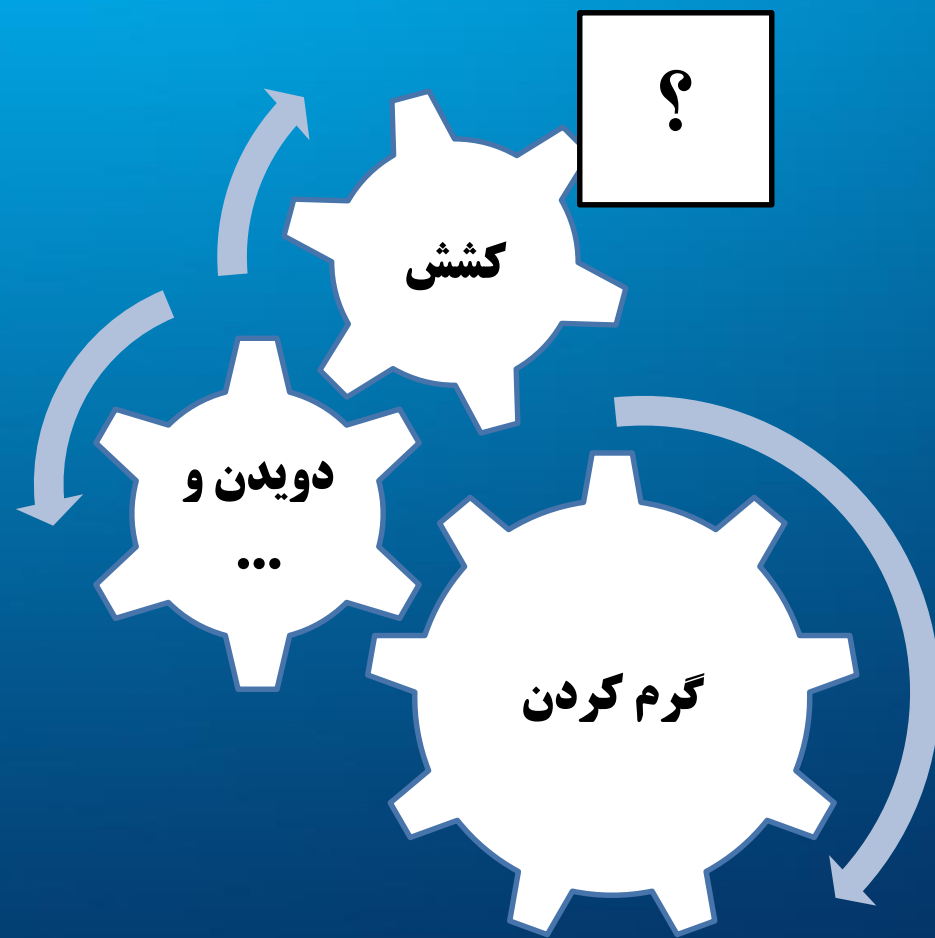






# SKILLS







**سپاس از توجه ارزشمند شما**