

Injury prevention method in HPG of JISS

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Contents

- Introduce JISS and HPG
- Explain our approach to prevent injury including actual examples
- Present our On-field preventive measures against injury.

Japan Institute of Sports Sciences(JISS)

Open 2001, Oct

In order to provide support for the performance enhancement of the international competitiveness of Japanese athletes

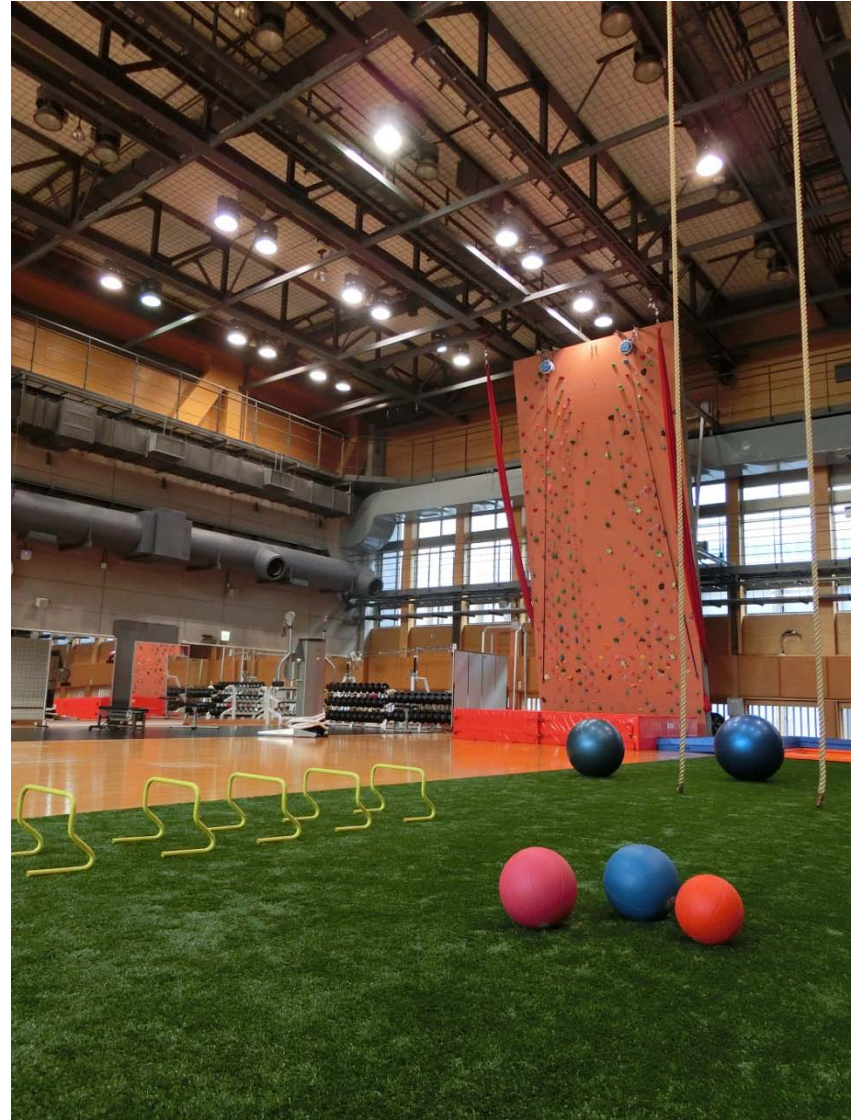


Japan Institute of Sports Sciences



High Performance Gym(HPG)

- Open newly in April 2013.
- Provide specialized training, which weight room does not have.
- Examine the newly developed training methods.



Performance Enhancement

Training



Recovery



Appropriate Conditioning
(Injury Prevention)



Training

Specialized training equipment

Recovery

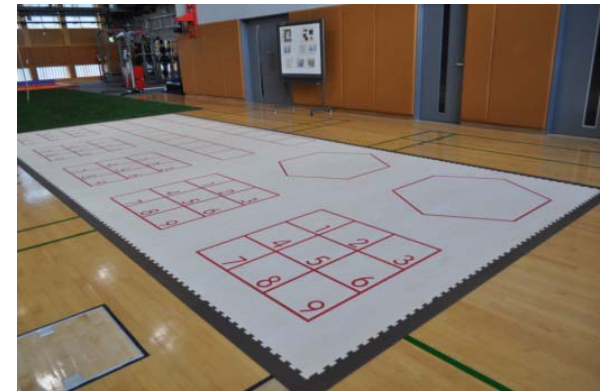
Equipment designed for the recovery enhancement

HPG Original

Training by objectively checking one's body movement

Pavi-Gym

- Castum order matt, made in Spain
- Agility training mattress: Lines already build in the mattress; Needless equipment such as ladder, or the hurdle.
- Same condition: Easier to compare the training effects and the athlete's condition of the day.



Hypoxic Room

The room that is created the hypoxic condition.
The maximum of the 5000m altitude environment.

- Improves the endurance capacity by train in the hypoxic environment.
- Acclimatize before traveling to the high altitude.
- Maintain endurance capacity while injured.



Whole Body Cryotherapy



The cryotherapy uses nitrogen to rapidly lower the skin's top layer to -196°C .

- Time of the treatment: 3 minutes
- Effects: Decreasing fatigue
- Research: The most effective Timing and frequency is still in research.

Image and Force Plate System

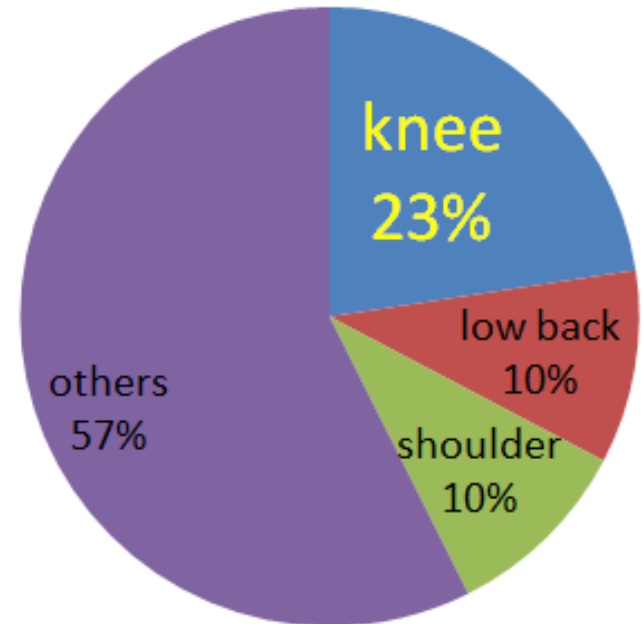
- Shooting from three direction
 - ☞ Side, back and Front
- 2 Force Plate

Able to watch the screen in front of you while showing from the three direction and also checking floor reaction at the same time

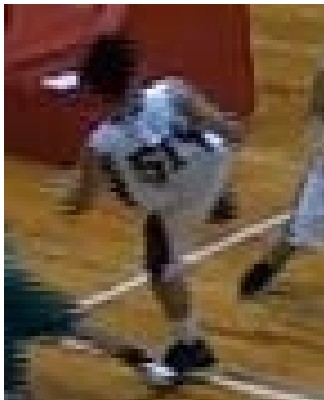


Approaching toward Injury Prevention

The knee injury is the most common injury in Japanese Elite Athletes.



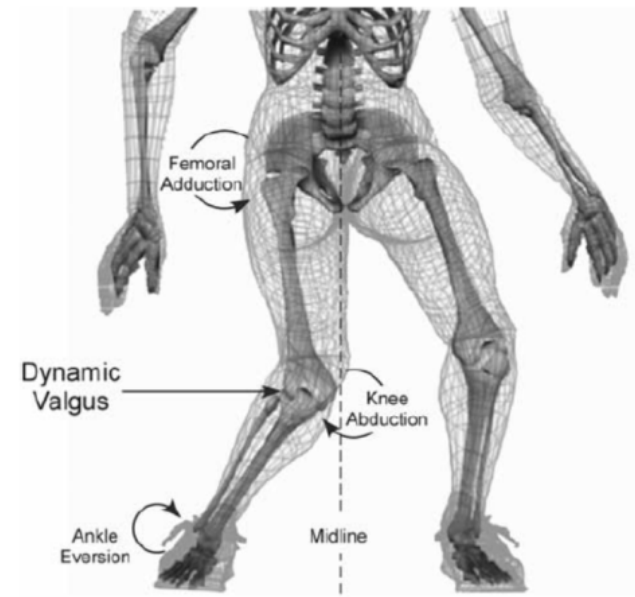
(Hangai,2013)



the biggest problem: ACL Tear.

Physiological factors of the knee valgus

- Limited ROM of extension and rotation of the thoracic cage
- Dysfunction of the Core and hip Joint
- Limited ROM of Ankle Dorsiflexion



Prevention approach in HPG

- Video and the force plate system
 - Enable observation of fixed point
 - Enable to observe changes through certain period
- Concentrate on Motion
 - Possible to improve by training
 - Relate to athletic performance

Functional Assessment for Athletic Body

FAAB

Screening test (Picture and Movie)



Correction program

FAAB-Screening Contents

1 Flexibility

2 Muscle function

3 Static Alignment

4 Dynamic Alignment

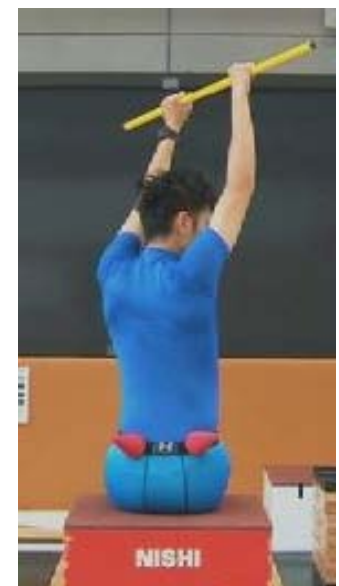
FAAB – 1)Flexibility



Trunk Flexion



Trunk Extension



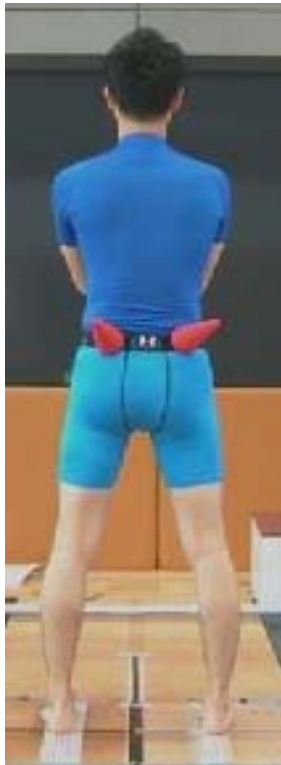
Trunk Rotation

FAAB – 2) Muscle function



Side plank
(Lateral Stability)

FAAB — 3)Static Alignment



Both leg Standing



One leg standing

FAAB – 4)Dynamic Alignment



Over head squat



One leg squat

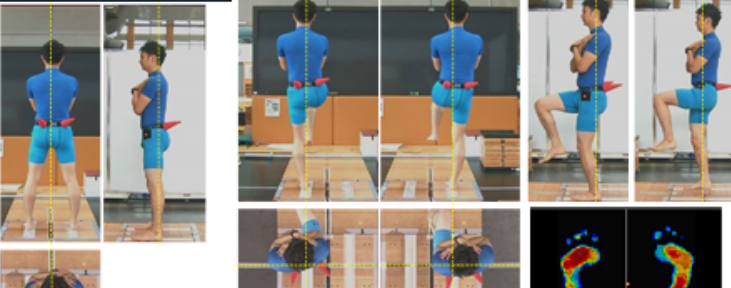


Drop Jump

FAAB(Functional Assessment for Athletic Body)

Name		Sports		M	26	才	20141108
身長	183 cm	体重	78 kg	体脂肪率	15.3 %	状態	7 / 10
利き足	R	軸足	R	前足	L	ケガ	None

1. Standing



Check

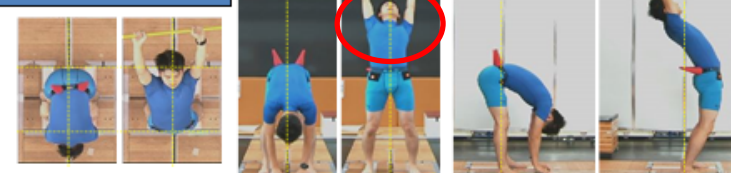
荷重比 1

左片足立ち 2

右片足立ち 3

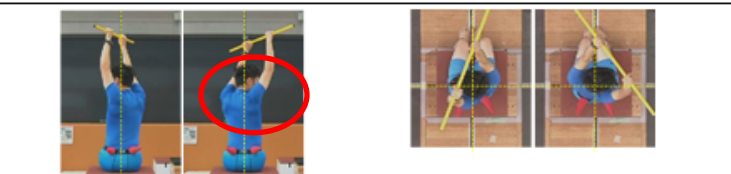
左 48 52 右

2. Flexibility



前屈 4

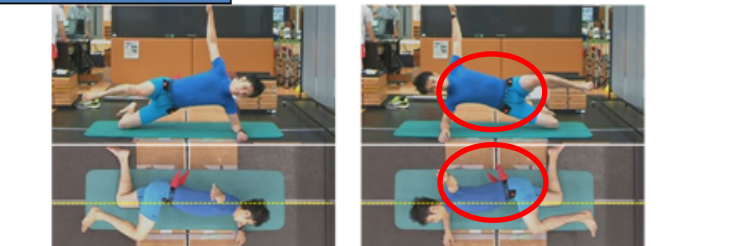
後屈 5 ※



左回旋 6

右回旋 7

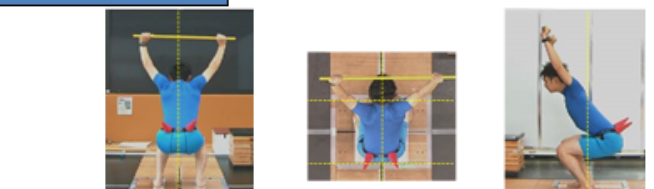
3. Side-Bridge



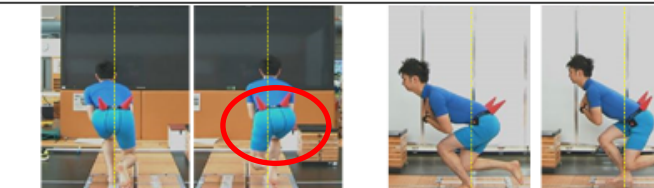
左下 8 ※

右下 9 ※

4. Squat

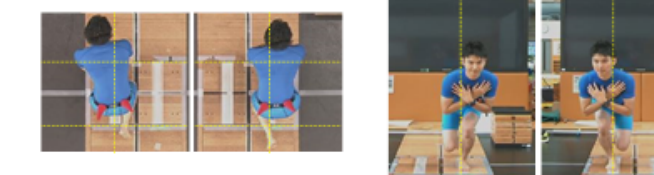


オーバーヘッドスクワット 10



左膝 11


左片足スクワット 12



右膝 13

右片足スクワット 14

5. Jump



左膝 15

右膝 16

HPG Conditioning MENU

Name

Sports

M

26

才

20141108

Chest stretching

20seconds
2set



1. Kneel down on the floor and put your hands on exercise ball.
2. Lower your head and push your shoulder into the floor.

Leg Swing

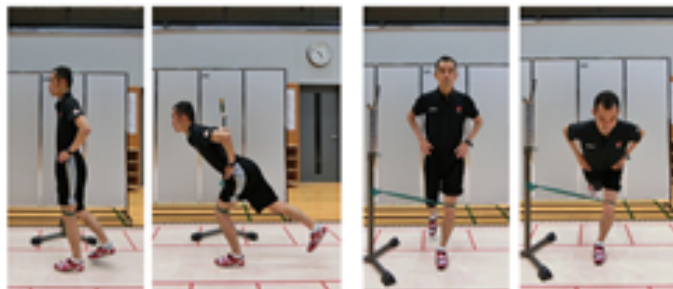
10reps
2sets



1. Lie on your side. Lift your top leg skyward and keep the position
2. Lift and swing Lower leg a little.

Single Leg Rumanian Deadlift

10reps
2sets



1. Stand on single leg with a tube over your knee. Lift the opposite side of leg behind
2. Bent forward at your hip. Pause, then push your body back to the starting position.

Back Lunge

15reps
2sets



1. Stand up straight. Take a big step backwards.
2. Touch your heel of taken leg with your hand of the opposite side of legs taken.
3. Return to start position.

Characteristics of FAAB

1) Easy to Compare

- Check by the same condition: Compare pre-, Post- exercise by using fixed camera.

2) Observe movement

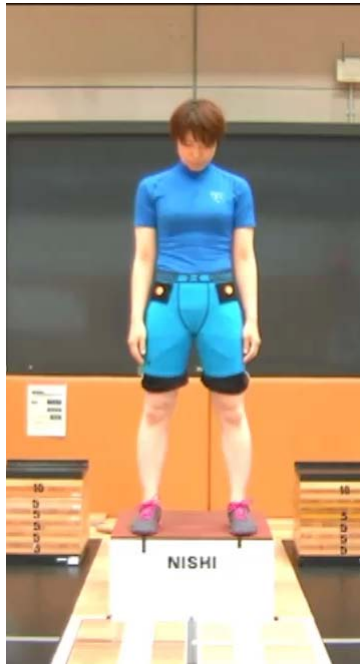
- Looking how the body move; not checking strength and/or ROM for one muscle.
- Close look to the problem we found in the movement.

On-Field Injury Prevention

- Observe the movement closely
- Inspect the movie and the picture
- Error movement seen often after fatigue.

Quick Screening Method-Knee

Movement of the play and jumps, etc



Quick Screening Method-Pelvis

Grab the back and athletes perform marching



Left side Standing



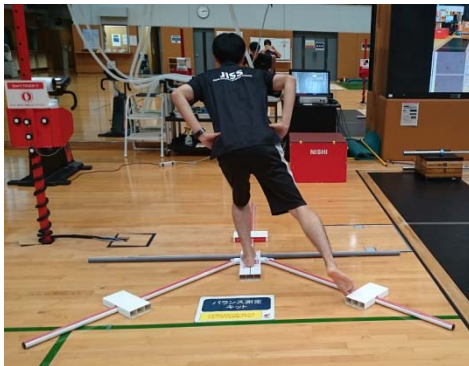
Right side Standing



☞ Right leg stand:
Dropness of left pelvic.

in the Future

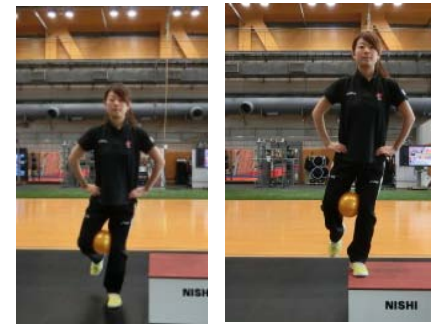
- Proceeding FAAB to the Junior athletes who aim toward Rio and Tokyo Olympics.
- Developing the methods for the prevention of Ankle Sprain Injury



Star-Balance Reach Test
Lateral movement specified made
by HPG



Plantar weight pressure movement
of the one leg landing



2020 Tokyo Olympic

Look forward to seeing you.