



## Aikido Knees

Practical Tips to protect our Knees

by

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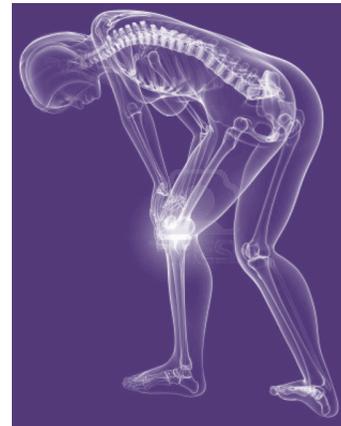
All of you who do Aikido for longer period of time probably know some people who have problems with their knees. So do I, and this is why I did some research on it and want to share my findings with you.

In ancient times martial arts were ultimately developed for gaining advantage in combat. Physical as well as mental preconditions in combination with frequent practice of skills were the main factors for success. And finally survival in the battlefield proved who is the better "warrior".

Following the principles developed and laid out by Morihei Ueshiba, we nowadays do not practice this martial arts Aikido for war or survival, but rather for our mental and physical development. This also leads to the fact, that many people join in, although they are not perfectly prerequisite by their physiognomy, age, body height, weight, proportions of extremities, reaction speed, etc. In particular in Aikido we do not fight or compete with each other in terms of winner and loser. Many practitioners do Aikido because they simply enjoy the fascinating movements. So practice and in particular teaching need to pay respect to the non-perfect physical conditions of our partners and students.

Modern sports medicine can be helpful to get advice for a healthy Aikido practice and I like to provide a few tips for protecting our knees during our exercise and practice. As I am not a medical doctor or expert, I simply put together some knowledge from public sources, my own life experience in doing various sports activities over the last 40 years, as well my early training as licensed sport instructor in Germany.

In addition I had discussed this matter with Dr. Horstmann to confirm my findings. He is specialist for sports related injuries at the Olympic Center of the Medical University Hannover, Germany



So-called knee problems in Aikido cover a big range from fatigue after intensive practice, age related arthritic pain through acute and serious injuries. Here I like to focus on awareness and the preventive measures, i.e. reducing the risk of unnecessary wear of the knee joint and avoiding injury and long-term negative impact on our knees' health.

A basic understanding of the physiognomy of the knee joint is very helpful to understand potential negative impacts:



Fig.1: front view illustration of the knee joint with adjacent muscles (source: MendMyKnee.com)



Simply speaking the knee joint is a joint for 2-dimensional bending with only very limited flexibility in rotation.

### My basic rules for dojo practice:

#### 1. Your knee and foot in the same direction

When you lower your position by bending your knees, pay attention that the knee points to the same direction as the toes of your foot point to.

Risk: torsional strain of your knee

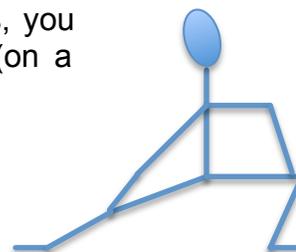
Situation: some warm up exercise, some movements as uke or tori

#### 2. Your knee shall stay behind the toes

When you lower your posture by bending your knees, you shall not allow your knee to protrude your tip toes (on a vertical projection)

Risk: high pressure to meniscus, high stress on front and cross ligaments

Situation: some warm up exercise, suwari waza (see comments below), some movements as uke or tori



#### 3. Your feet turn with your body

The flexibility of your hip allows you to a limited extend to turn your body without changing your foot position. If you turn your body further, you must allow your feet also to rotate. This avoids torsional strain, that occurs e.g. by keeping you foot flat on the ground while turning your body.

Risk: torsional strain of your knee

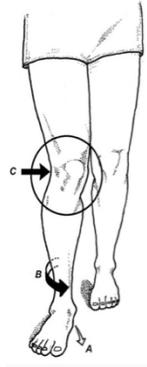
Situation: some warm up exercise, some movements as uke or tori, e.g. tenkan

#### 4. Avoid shock and side impact

You shall avoid sudden impact from the side to your knees by awareness of potential collision.

Risk: high stress on side and cross ligaments

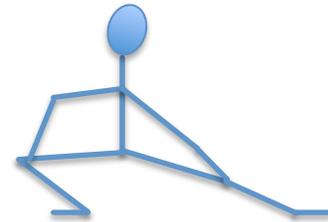
Situation: accidental collision of other person crashing from the side to the knee. Some movements as uke or tori, like tankan with big circular movement of leg are increasing this risk.



#### Examples:



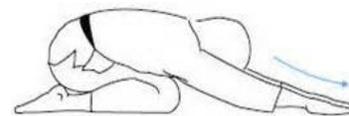
Fig. 3: Extreme knee joint bent under full body load  
(source: kohaido.blogspot.com)



Extreme stretching (hyper flexion) e.g. during “warm up” can give high strain to the knee joint. In particular the practice with high (body) load on the knee joint are risky for the joint.



Fig. 4: Hyperflexion, but without bodyload  
(source: aikidokisociety.com)

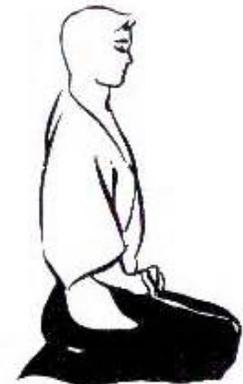


The same applies to extensive sitting in seiza, in particular for people who are not used to such sitting position. Although a part of the body weight is carried by the feet when sitting in seiza, but the knees are extremely bent.

Better avoid all extreme flexion and particularly under load of your body weight.

#### My comments regarding seiza and suwari waza:

As Aikido also carries a long tradition of Japanese culture, sitting in seiza and walking suwari waza (walking on knees) is an integral part of Aikido practice. In particular in Japan - and to some extent in other Asian cultures - people are used from childhood in normal daily life to such sitting position. However suwari waza is not such common movement anymore in modern life. Moreover this kind of movement combines the risk of extreme flexion with forces to the front of the knee and all that in a dynamic situation. So be aware of the risk and dose the practice of suwari waza wisely.



**Basic sports medical rules** that can also benefit the knee joint on the long run:

**1. Stretching only with a warm body,**

i.e. first some cardio exercise (bring blood circulation, pressure and pulse and breathing to higher sustainable level) to warm up the body before starting any stretching exercise

**2. Slow stretching**

Stretching exercises shall be done slowly to allow for a few seconds muscle- and ligament-fibers to expand (sudden stretching is not effective and in particular with cold body can even cause micro damage of fibers)

**3. Support your knee**

Improve muscles around the knee by special exercising to stabilize and support the knee joint.

**4. Adjust your keiko dosis gradually**

You shall increase your practice hours gradually and not jump from e.g. 2 times per week to 3 times per day.

**Some diet advise:**

Some age related pain of the knee joint could be reduced by your diet. E.g. eating ginger (a few grams per day) can significantly reduce fatigue pain after practice. Also warm wraps with cloth soaked in ginger juice can reduce fatigue pain.

Some other advice from TCM is avoiding fat food (in particular pork fat), whereas red beans, lambs meet can have positive effects.



Moreover it is quite interesting that the positive effect of ginger is not only known in Traditional Chinese Medicine. Also for natural veterinary doctors it is common knowledge that feeding ginger to horses that suffer pain of worn joints from extensive jumping exercises and competitions can significantly ease their pain and maintain high mobility in advanced age.

There is a lot of literature on the subject and easily accessible for those of you who want to go deeper into the matter.

Hopefully with this article I can help to increase the awareness of the risks that we expose our knee joints during Aikido practice. My motivation is that this simple collection of information may be of practical help to you Aikido practitioners and contribute for a healthy practice of this wonderful martial art called Aikido.

Shanghai, January 2014

Sources:

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