Injury Prevention in Aikido Training

"Aikido is the spirit of loving protection for all beings"

O Sensei

Protecting yourself and your partners and students from injuries can be an integral part of good Aikido. This handout is intended to accompany a mat class on injury prevention in Aikido. The concepts described here have been developed over decades of Aikido training, training as a physical therapist specializing in injury prevention, and personal experience as a person with a medical condition making me vulnerable to injury. This handout focuses on the most common problems in 4 common body regions: knees, shoulders, wrists, and the low back. Shoulder and wrist protection principles are based on subtle modifications of ukemi and nage during practice. Knee and back protection are based more on having well-balanced muscle strength and mobility.

Some basic principles of training for protection:

1. These are not 'alternatives' to good Aikido, but can facilitate good Aikido, both as nage and uke.
2. These principles embody "O Sensei's Rules of Training" #5: *"In daily practice first begin by moving your body and then progress to more intensive practice. Never force anything unnaturally or unreasonably. If this rule is followed, then even elderly people will not hurt themselves and they can train in a pleasant and joyful atmosphere."*
3. For the following recommendations, it is helpful to adjust the speed and strength of the attack and technique to allow uke and nage to learn proper movement before trying to go faster or apply more force. Think of rating the speed and strength each on a 0-10 scale, where 0 is static or touchless and 10 is as fast/strong as you can go. Uke and nage should agree on speed/strength to facilitate what they are trying to practice at that moment. Injuries are more likely when there is a mismatch between the speed or strength that people are training at, or if someone suddenly changes/increases speed or strength.
4. Most people find it helpful to learn these movements starting at about 3 speed and 3 strength, then gradually increasing strength before speed so you can develop motor control slowly up to about 3 speed and 7 strength (depending on your skill level). Then start again at 3 speed and 3 strength, increasing speed without increasing strength. Beginners or people with injuries of physical limitations should progress slowly to enhance motor learning and safety. More advanced students will progress more quickly and to faster/stronger attacks. Train at levels that are safe for you at this time.
5. Uke and nage need to develop trust, otherwise uke will become tense for fear of injury, and nage will become tense because the technique doesn't seem to be working. See O Sensei's rule #5.
6. Uke can choose to move in ways to protect his/her body. Don't wait until you are forced to move. Choosing to protect yourself is good Aikido. Uke never gives up his/her autonomy.
7. Don't lag behind nage's movement; instead, move at the same time and speed as nage is applying the technique, as though you are surfing a wave – not in front and not behind, but right at the same time and speed as the wave. Once learned, this can be done at full speed and strength.
8. Uke generally shouldn't turn her/his back to nage. Turning away isn't safe and it breaks the connection.
9. In general, this type of ukemi improves the connection between uke and nage, and positions uke for kaeshu waza (reversals) when appropriate. Hence, this ukemi can be strategic as well as safe.

Scan code to access this handout:

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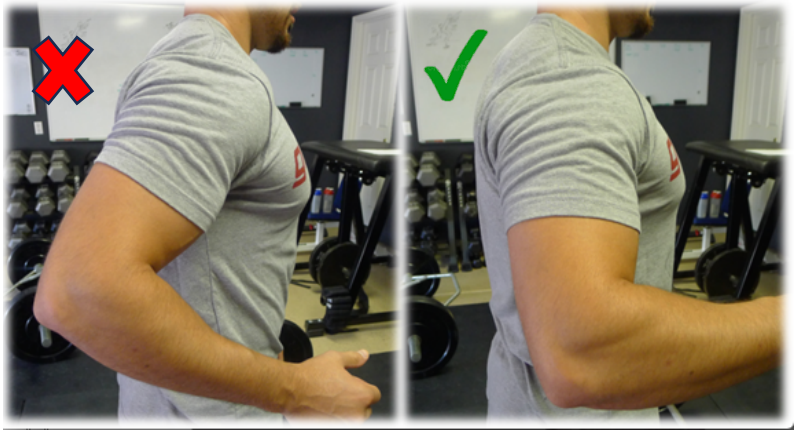
SHOULDER PAIN

Shoulder pain in Aikido is often due to rotator cuff impingement, bursitis, shoulder instability. A bad roll can lead to acromioclavicular joint separations, which may need additional precautions not discussed here.

"Flattening the Shoulder"

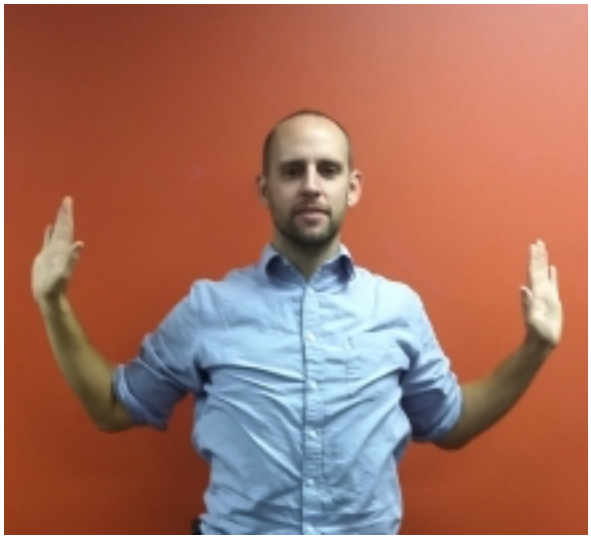
Most people have tight chest muscles that pull the shoulder joint forward, causing a dip at the front of the shoulder (left picture). If you can feel the round top of the humerus, your shoulder is forward. This forward shoulder position makes it more likely that muscles and bursae in the shoulder will get compressed and possibly damaged taking ukemi for things like ikyo, nikyo, etc. To learn the proper alignment, place your opposite palm on the front of your shoulder, feeling for the dip. Now pull your arm bone straight backwards so the dip is gone and the front of the shoulder is flat, as in the right-hand picture here. You may find it helpful to rotate your arm so that your thumb turns outward to first learn this alignment. This movement isn't about squeezing your shoulder blades together (though often also helpful), but the arm bone moving backwards.



When "flattening the shoulder," you should feel the back side of your body activate, and feel how the energy from your fingertips connects to your back foot. Activating the back of your body like this can also protect your shoulder and strengthen shomen and yokomen strikes. Try to feel the connection from fingertips to the earth throughout your ukemi.

Shoulder Balancing Exercise:

Tight muscles in the front of the shoulder, and weak shoulder blade/upper back muscles increase impingement and damage to rotator cuff muscles. Reach both arms up in the air, forming either a W or a goal post shape with your arms. Turn your palms out so your pinkies are facing backwards. Next pull your shoulders and elbows back as pictured. Don't let the front of your shoulder joint slide forward when doing this (i.e., flatten the shoulder). Hold 5 sec. You can incorporate this into standard Aikido breathing exercises.



Connecting your Shoulder to your Center

Once you have 'flattened your shoulder," explore how to connect it to your center. Keep the opposite palm on the front of your shoulder to make sure it stays aligned. Rotate your arm/thumb inward (as in ikyo ukemi, though your arm may be lower down) until you cannot rotate further without losing the flattened shoulder. After this point, your ukemi will need to involve moving your body, so your shoulder doesn't get pushed forward. This will help you connect your arm to your center as uke. When first learning this, you may want to rest your opposite hand on the front of your shoulder during actual ukemi, to help you learn where your shoulder moves.

Centering the Shoulder During Ikyo/nikyo… Ukemi

The ikyo/nikyo series of techniques can cause shoulder impingement and rotator cuff damage if the humerus (arm bone) is allowed to wobble around or slide forward. When taking ikyo ukemi, do the "flattening the shoulder" and try to keep that flattening by keeping up with the technique. This will keep the ball of the arm in the shoulder socket, rather than being pushed forward or up. Don't allow yourself to be pushed into ikyo, but move at the same time and speed as nage is applying the technique, as though you are surfing a wave – not in front and not behind, but right at the same time and speed as the wave. Your shoulder should neither be floppy nor stiff, but resilient. This ukemi will help you feel nage's movement in your center, because forces will be transferred to your center rather than into your shoulder.

Staying Connected to Nage

During ikyu/nikyo/sankyo/yonkyo ukemi, don't turn away from nage, as that forces the shoulder out of alignment. If nage's movement is into or drawing away from your center, your body needs to move in that direction. If nage's movement rotates vertically, as in a sword cut, your body needs to rotate around your arm.

WRIST PAIN

Wrist pain is most often from taking ukemi for nikyo, sankyo, kotegaeshi and shihonage. To protect the wrists, learn to gently control/resist the pressure from these techniques so the wrist doesn't get pushed beyond its safe limit. Learn this initially through doing the warm-up wrist 'stretches' in protection mode. If we call normal active range at the wrist 100%, then stretches push the wrist to something like 120%. This is fine if your wrists are stiff and strong, but not if your wrists are injured, fragile, or hypermobile. To protect your wrist, learn to limit motion to about 80% of your available active range. Begin to gently control the 'stretch' at about 50%, gradually increasing the resistance until stopping wrist motion at 80%. Practicing this during warm-ups helps the wrist learn to recognize when it should start to limit motion, and learn to gradually activate muscles to limit and control motion.

As uke during wrist techniques, start to control your wrist movement at about 50% range, and stop wrist bending/twisting at 80%. You will then have to move your body to receive the technique. Don't lag behind nage's movement; instead, move at the same time and speed as nage is applying the technique, as though you are surfing a wave – not in front and not behind, but right at the same time and speed as the wave.

For sankyo, kotegaeshi, and shihonage, nage can also protect uke by grasping across the wrist so the pressure is applied to the both the forearm bones and the wrist/hand, rather than all the force across the wrist. This can also improve connection to center by avoiding floppy wrists. Uke and nage can both keep uke's wrist straight in sankyo, and relatively straight in kote gaeshi, as shown here.

KNEE PAIN

The most common type of knee pain in Aikido is probably patellofemoral pain (aka 'anterior knee pain'). This is likely if you have pain in the front of your knees that hurts when sitting in seiza and gets worse as a practice/seminar goes on. The most likely cause is overusing your quadriceps muscles (front of thigh) by repeatedly getting up from rolls and falls. It is more likely if your gluteal (buttock) muscles are not strong enough or simply not being engaged. Repeated falls and rolls make the quads tight, causing knee pain. In the short term, stretching the quads can be helpful. However, it is critical that the stretch is done correctly, as we often stretch where we are already stretchy rather than where we are tight. In the long term, strengthening the gluteal muscles and learning to push yourself up from the mat using your hip/glutes rather than your knee/quads.

For both quad/rectus stretches, it is important that the back is stabilized and the knee not fully flexed. Activate your abdominal muscles to flatten your back – it is critical that you don't let your back arch. Tuck your tailbone down and push the back hip forward to extend the hip. Try to get more of the stretch from extending the hip than bending the knee, as bending the knee too much can aggravate the knee pain.
Hold the stretch 30 sec, 1-2 times each side.

Mat stretch for rectus femoris (picture left): Kneel on one knee, reaching back with your hand to grab your foot. For a slightly better stretch, grab with the opposite side hand. Emphasize hip extension more than knee flexion. Shift weight forward or do stretch standing so weight isn't on the kneecap.

A better stretch for rectus femoris, that you can do at home, is show in the right picture. You can also do this stretch kneeling on a chair or couch with an armrest to support your ankle. The front foot would then be on the floor. This position allows you to really lean into the stretch.

<u>Gluteus Maximus Strengthening</u>

You also need to strengthen the gluteal muscles so that they do most of the work of standing from rolls. This exercise is a convenient way to train the glutes. Stand facing a chair with the fronts of your knees almost touching the chair (closer than shown in the picture here). Bend your knees so that your buttocks goes backwards, keeping your knees hip width apart. Do NOT let your knees move forward of the arch of your foot (the picture here has the knees too far forward). Do NOT let your torso tip forward so that your nose passes your knees (the picture here is leaned too far forward). Start by lowering down slowly over 5 seconds, and coming up over 2 seconds.

<u>"Short Foot" Exercise</u>

Flat feet can also contribute to knee and hip pain on the mat. Since you cannot wear arch supports on the mat, it can help to strengthen the arch of the foot. Do this only if you have flat feet – not if your have high arches. Pull the ball of your foot and heel towards each other to increase your arch, creating a 'short foot'. Try not to do this by curling your toes – that would be using strong muscles to compensate for weak muscles. Hold 5 seconds, repeat 10-20x. This exercise can be done sitting, but standing is more functional. Bonus if you do this while doing the squat exercise, keeping the knees hip width apart.

BACK PAIN

There are many potential reasons for back pain impacting Aikido training. The current discussion is intended to help minimize pain and further injury and cannot be used to diagnose or treat back pathology. The back is stressed when surrounding muscles are either too weak or too tight. Often several hip muscles are tight: usually the hip flexors, the quads/rectus femoris, and the hamstrings. When stretching these muscles, it is critical that you stabilize the spine, because an unstable spine will stretch before a tight muscle. The abdominals and gluteal muscles also need to be strong to come up from backfalls and rolls.

Hip Flexor Stretch

Kneel down, and take a large step forward with one leg, with the knee over the ankle. Shift your weight forward and squeeze your back glutes as you tuck your left pelvis under. Don't let your back arch! Tight hip flexors will tend to pull the back into an arch, so you have to consciously prevent the back from arching. This action also teaching the muscles to protect the back by preventing it from arching too much. Raise your arm up and side bend/slightly rotate the waist away from the back leg. Hold for 30-60 seconds and switch sides.

Hamstring stretch

Mat Stretch for Hamstrings

Sit on the floor with either one or both legs stretched out, reach forward with your hands towards touching your toes. Try to keep your torso straight as it tips forward from the pelvis. Think of dropping your belly button towards the leg rather than your shoulders or head. Do not let your upper back hunch forward as shown in the picture, here. Again, your body will tend to stretch where you are already most flexible, and not stretch what is stiff.

Better Stretch for Hamstrings (if you are really tight)

Lie on your back and place your leg up a wall with knee straight. Your other leg should be straight at the knee and resting on the floor through a doorway or hall. Hold 60 seconds. If your hamstrings is tight, your buttock will be further away from the wall. If you can put your pelvis against the wall and straighten your leg, your hamstrings are not tight and don't need to be stretched.

Quad/Rectus Femoris Stretch – see above, under Knee Pain
Gluteus Maximus Strength – see above, under Knee Pain

Tight Back Muscles or Weak Abdominals

If your rolls thump as you go over, either your back is tight or your abdominal muscles are weak (or both). You should be able to tuck your knees to your chest and rock back to your shoulder blades, without letting your head touch, and rock back up to sitting. If you are unable to be able to do this without your arms holding your legs, your abdominal muscles are weak. If you thump even when you hold on to your legs, your back muscles are too tight. You can also use this Pilates exercise to stretch the low back and strengthen the abdominals. Keep neck tucked to strengthen the neck. If you are over 50 and may have low bone density, it would be safer to not flex the spine in this way.