

Biomechanics is the science which deals with forces that are produced or act upon the human body. The objective in all Jiu jitsu techniques is to create as much force as possible to ensure the efficiency of the technique. The Six Jiu jitsu Principals define the skills of this martial art in the terms of balance, joint forces, sequence, momentum, speed, time and direction.

Poor techniques will develop if one of the following principals is left out. Through the knowledge of Biomechanics it will be possible to assess the cause of a poor technique, understand what principal was left out and correct the problem.

1. THE STABILITY PRINCIPAL

A strong base of support will give you the ability to resist force, the area between the feet, your stance. Maintaining your center of gravity gives you stability. The stability allows you the ability to go into mobility, action.

2. THE SUMMATION OF JOINT FORCE PRINCIPAL

Using all the joints that can be used in order to produce maximum force.

3. THE CONTINUITY OF JOINT FORCE PRINCIPAL

Use the joints in the correct order, big to small. E.g. the hip is a large muscle. It is slower however stronger than the smaller muscles of the leg.

4. THE THRUST (IMPULSE) PRINCIPAL

The combination of force, and time applied against an object develops maximum power. Each joint must go through its complete range of motion, from bent to straight limbs. This maximizes strength and flexibility and the maximum time of application has been used to comply with this principal.

5. DIRECTION OF FORCE PRINCIPAL

Force is created in the opposite direction to thrust. For every action there is a reaction. E.g.: When jumping in the air you push against the ground with your feet in order for your body to go up.

6. THE GRIP AND CONTROL PRINCIPAL

This is the link between the origin of force and the receiver of that force. A transfer of energy is happening. The tighter you grip the opponent the more energy you transfer if your grip is too loose the force will be lost however being too rigid there will be a loss in wrist flexibility, speed and control.