

# Mastering Jiu Jitsu With Momentum

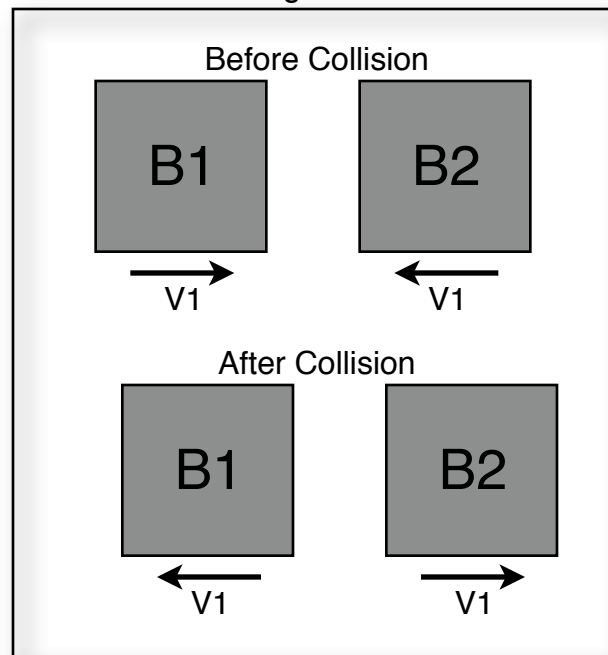
Wally Holem

When thinking of momentum most think of speed or producing speed. Although this wouldn't be the wrong way to think when hearing the word, I want to analyze momentum that is forced, applied, and given. These three kinds of momentum mark the developmental stages of a Brazilian Jiu Jitsu and Mixed Martial Arts practitioner. The unfortunate thing is most who enter the martial arts arena never learn the essence of true momentum or the advantage gained while using it properly. It is my goal to give learners the tools and knowledge to understand the importance of momentum as it applies to BJJ to move from white belt thinkers to black belt ones.

## Bully Jitsu

Momentum change will occur if we *force* our opponent into changing directions. I call this forced collision or, even better, Bully Jitsu. Most commonly this comes from a push or a pull which causes someone to change direction or velocity due to the force of energy upon contact. We see this all of the time on the mat when guys go for takedowns or sweeps. An easy way to think of Bully Jitsu is to imagine two bodies colliding head on. The winner is usually the bigger or faster one. So in this battle it doesn't pay to be the smaller, slower guy. It doesn't take a whiz to figure out why the bigger guys can push the smaller ones around, but let's take a look at how physics is applied so we can build our knowledge for further analysis.

Figure 1



For our example let's assume that both athletes are identical in mass and size. And for the sake of simplicity, we'll say that energy isn't absorbed from the collision. So what can physics tell us about two guys smashing into each other? Figure 1 above shows us that if the first guy (B1) runs very fast ( $v_1$ ) and smashes into the second guy (B2), who is also running very fast ( $v_1$ ), they collide and bounce off each other the same speed they were going. We see this a lot in the gym, especially with white belts who try to muscle through things. Now let's change the scenario a bit and put a bigger guy against a smaller half his size. The equation would read something like this. Some guy (B1) in the gym thinks he's going ( $v_1$ ) to take down someone twice his size ( $2B$ ) who is heading in his direction ( $v_1$ ). After colliding into each other, the smaller guy (B1) bounces backwards almost 2 times faster than the bigger guy (B2). Again, bad for the little guy. Most of you reading this have probably experienced being pushed around by someone 2 times your size.

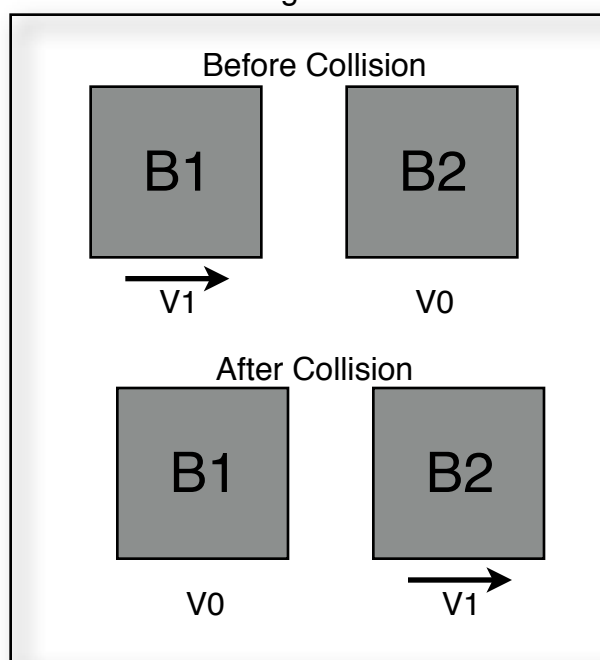
When this happens you also know that it is probably you that lands on your back. In fact, according to physical laws, you'll bounce off about 2 times the velocity you were going and the bigger guy hardly feels the effects. This is due to the transfer of energy and mass from the collision. And this is exactly what we see day in and day out in the gym: two guys going at it like bighorn sheep. They continue to bang heads until one finally succumbs to the other. Typically, the larger you are the better you'll fair in the big horn sheep combat match. Not unlike the BJJ mat or cage match. What's more, these are the guys who gas-out quickly because of their relentless use of muscle and oxygen.

### Playground Jitsu

As you get further into BJJ you should acquire awareness of the difference between easy movements and difficult ones. I'm not talking about white belt versus black belt movements but ones that flow smoothly versus those that take extra work getting done- like Bully Jitsu moves. Arriving at this stage in the game means learning to avoid, at least in part, the head on collision game. Instead, you start to realize when to *apply* a move at the appropriate time and catch your opponent off guard. In addition, at this stage of the game a student begins to distinguish the distant voice of a coach from across the room. I call this stage of the game Playground Jitsu. At the playground we used to get behind our friends when they weren't looking and have someone push them over us causing them to fall. Remember those tricks. In BJJ you can do this by simply catching your opponent off guard. By the time you reach mid-blue belt range, you should be showing signs of this proficiency at the expense of your opponent. Let me show you how it works.

Say you are on the bottom position of the guard and are wanting to execute a hip sweep. You feel some resistance from your opponent as he pushes on your hips and torso to keep you in place. So to keep from being a Bully, you decide to wait until your opponent relaxes for a second. At the very moment you feel your opponent relax you sit up and execute a perfect hip sweep ending up in the mounted position. "How easy was that?" . . . you ask yourself. Too easy! The reason why it was effortless takes us back to physics. The equation looks like this. You (B1) are on the bottom position of the guard and want to execute a hip sweep (V1). You feel some resistance from your opponent (B2) as he is pushes on your hips and torso to keep you in place. So to keep from being

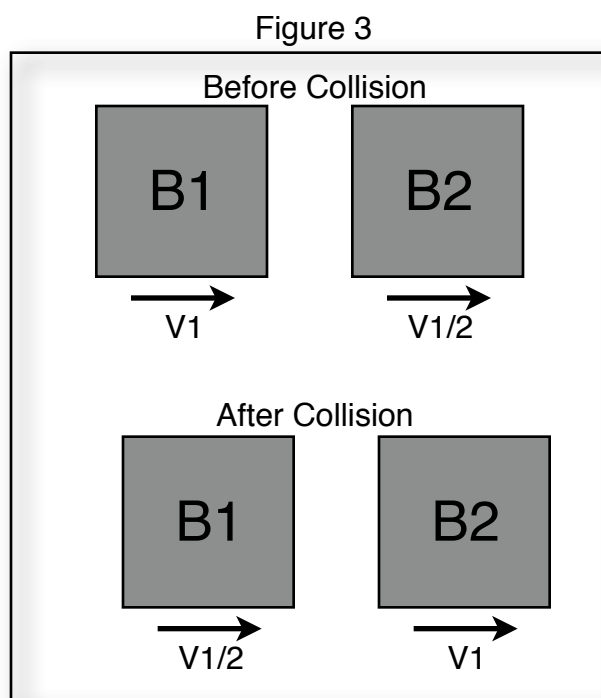
Figure 2



a Bully ( $B1+V1=B2+V1$ ), you decide to wait (important) until your opponent relaxes ( $V0$ ) for a second. At the very moment you feel your opponent relax ( $V0$ ) you sit up and execute a perfect hip sweep ending up in the mounted position. . . sweep = 2 points (see figure 2). Why is this important to know? I guess if you want to be a bully then it isn't important. But if you want to use less force to accomplish the same task then it is critical to learn! Check it out. If you can push, pull, or collide with your opponent who is momentarily at a stand still you'll get him to move at the velocity you started out at. Now here's the great news. If your opponent is bigger than you and you execute a hip sweep while he is at a stand still you will still get him to sweep- with no additional effort! Bravo for the smaller guy!

### Black Belt Jitsu

The third level is without question the most important one. Here is where we are *given* control of momentum by using our opponent's directional patterns. This is free impetus. Impetus is the force or energy with which a body moves. As a white belt, or even higher, you are so concerned with enforcing your way and will upon your opponent (i.e. Bully Jitsu) that you usually neglect learning this critical aspect of your game. Likewise, as a purple belt, knowing when to catch your opponent off guard (i.e. Playground Jitsu) may be as far as you've progressed. But to move to the next level in your game you need to learn the lesson of free impetus. I call this level Black Belt Jitsu. This is the third level of momentum that I was talking about in the opening paragraph of this article. This momentum is *given* to us. Showing sign of proficiency in this is evidence that you've moved up in your game. Gaining free impetus is the "nudge" you hear me talking about in class. And a nudge is really all you need.



Have you ever had a sweep or takedown feel really easy and wonder why? I mean almost like the opponent fell right into it or gave it to you. It's the same move you've done a ton of times but something just seemed smooth, clean, and easy. Black Belt Jitsu thinkers should be concerned with how to replicate freely given momentum. It's that simple. So check it out. Two guys are getting ready to spar. The first person leans in on you at an attempt for a takedown. To avoid a take down you turn to the side, and while he is sliding by, you give him a little push in the back or shoulder. What happens to the guys' velocity who initiated the take down? Now check this one out. Say you are in your guard and your opponent postures up to begin initializing a guard pass. At the very moment he changes momentum you sit up into him. That's free impetus-- Black Belt

Jitsu! Let's look at it mathematically. A guy (B1) is pressing ( $V1/2$ ) into you to take you (B2) down so you wisely step to the side and push ( $V1$ ) him through (see figure 3). The second person (B2) who was traveling only half the speed ( $V1/2$ ) when starting out receives the energy or momentum of the first when they collide and changes velocity almost twice as fast! In the guard this means that if a guy sits up at a relatively slow pace but is struck by your fast moving hips he will then move as fast as you were going but only slowing your momentum down a bit. This is assuming, of course, that his balance is broken and he has nothing to post on.

### **Conclusion**

Learning when to react to momentum swings requires awareness that comes with years of training and good teaching. It doesn't necessarily come with a belt color because some find ways around learning it and still move up the ranks. These individuals are athletic and use natural abilities to win matches. However, the day that you have a Black Belt Jitsu moment your game will never be the same. Remember, though, to try to avoid head on collisions. Instead, consider learning to wait until your opponent moves and go with the flow. It isn't hard to see the advantage you could have while understanding and using free momentum. It's remarkable! This is truly what separates the the good guys from the great guys. And you don't have to be a black belt to achieve it.