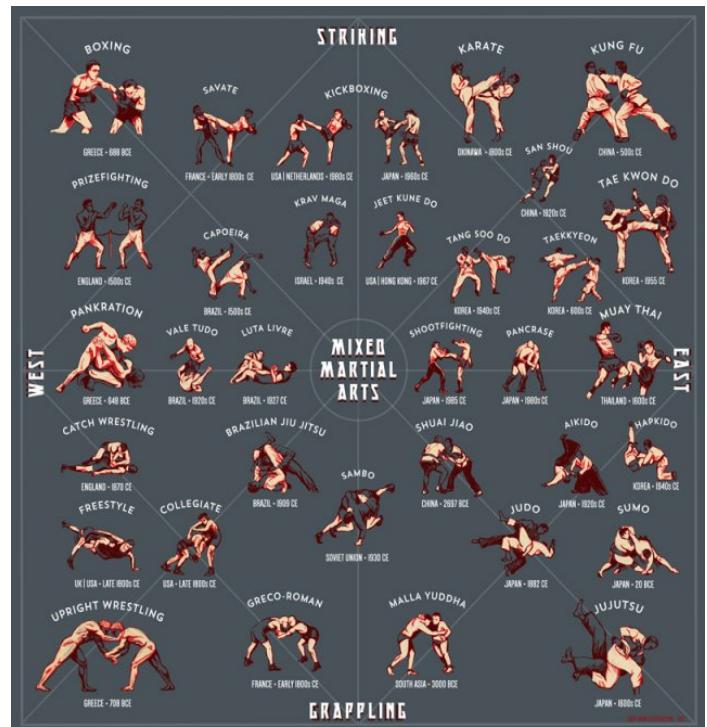


The Ideal Composition of a Fighter

The Ultimate Fighting Championship, or the UFC, is an organization that hosts Mixed Martial Arts competitions. Mixed Martial Arts is a sport that combines boxing, kickboxing, wrestling, jiu jitsu, etc into one fighting style. Due to there being different aspects of fighting, different anatomies struggle and thrive in each fighting style. For example, shorter fighters have an advantage in wrestling due to a lower center of gravity. On the other hand, taller fighters have an advantage in striking (boxing and kickboxing) due to an extended reach in which they can strike their opponents in longer ranges. Furthermore, age is an interesting factor that determines the prime of a fighter. Unlike other sports, UFC fighters tend to be able to thrive in older ages. This is due to the fact that older fighters have more experience to master techniques in which they can use in their fights. However, similar to other sports, fighters' physical and athletic abilities deplete as they age. In this study, I analyzed the average age, height, and reach of each weight class to determine the ideal composition of a UFC fighter. Furthermore, I grouped every mean by weight class due to the fact that weight class determines the height and reach as a fighter as taller fighters tend to be heavier. Furthermore, I chose to only analyze male fighters in order to make all groups as consistent as possible.



This image shows Conor McGregor vs Khabib Nurmagomedov. This is a case of two fighters with extremely different fighting styles. McGregor is a notable striker in which it is usually ideal to be taller and longer. However, Nurmagomedov is a notable grappler in which shorter fighters tend to have an advantage.



This diagram shows all the martial arts that can be used in the ufc. Every martial art, or style of fighting, has an ideal composition for age, height and reach. This study will analyze the age/height/reach composition which incorporates fighters who each utilize a different proportion of these martial arts.

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The ufc -master data set contains the last 4896 UFC fights which describe the statistics between the red corner fighter and the blue corner fighter. I divided the data set into the red corner winners and the blue corner winners. This is due to the fact that I am finding the ideal composition. Therefore, I decided that only analyzing the winners would complete this task. Afterwards I divided both of my newly created data sets into weight classes (heavyweight, light heavyweight, middleweight, welterweight, lightweight, featherweight, bantamweight, flyweight) in order to compare averages with groups that are similar as possible.

In my findings, the data indicates that the ideal age is 27.6438 years for flyweights, 28.3894 years for bantamweights, 28.0636 years for featherweights, 28.8452 years for lightweights, 29.8061 years for welterweights, 30.08063 years for middleweights, 30.6851 years for lightweights, and 31.8665 years for heavyweights. The results show a positive correlation between weight and the ideal age of a fighter. Further experiments can be done to see if this is due to weight cutting. Smaller weight classes force fighters to have a greater weight cut in order to compete. This can be a causal link between the positive correlation between age and weight class. This study, however, cannot confirm the causal link due to the fact that this is an observational study. The findings of these ages is truly significant as it can be utilized for recruiting. The UFC can recruit fighters who are younger than the prime ages found in order to hire fighters before their prime. Therefore, the UFC could utilize every fighter for most of their longevity.

My findings also indicate that the ideal height is 165.8157 centimeters for flyweights, 170.3186 centimeters for bantamweights, 174.7857 centimeters for featherweights, 177.2485 centimeters for lightweights, 181.7565 centimeters for welterweights, 184.9271 centimeters for middleweights, 188.1972 centimeters for light heavyweights, and 190.9044 centimeters for heavyweights. Furthermore, the data shows that the ideal reach is 168.9851 centimeters for flyweights, 174.3197 centimeters for bantamweights, 179.2863 centimeters for featherweights, 181.9676 centimeters for lightweights, 186.7643 centimeters for welterweights, 190.7663 centimeters for middleweights, 194.6065 centimeters for light heavy weights, 197.6528 centimeters for heavyweights. This finding is significant for fighters who choose to move weight classes throughout the years. If a fighter chooses to move a weight class, he must consider if he falls in the right physical attributes of an ideal male fighter. Furthermore, his style of fighting can additionally influence his decision. For example, if a fighter with a grappling background is under the ideal height or reach for his weight class, he may still have success in the weight class due to the fact that shorter fighters suit the wrestling style effectively. However, the same would not apply for a striker in which being taller and longer is more advantageous. These findings could be used by a fighter or his coaches/team to make the best decision for his weight class to perform at the highest athletic level.