

7. Injuries in Judo: Comparison of the risk profile in Japan, Germany, and USA

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7. 日本、ドイツ、アメリカ合衆国における柔道による傷害の比較分析

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要 約

柔道は、世界中に普及し、海外でも人気が高い。しかしながら、海外で行われている柔道は、日本の柔道とはやや趣の異なるものである。海外の柔道では、一本ではなくそれ以外のポイントを狙うなど、ルールを最大限に生かした、勝利優先の戦い方が重視される。

このような背景のもと、日本以外の国々では、日本の伝統的な柔道の練習方法とは異なった練習方法や試合方法が発達した。そのため、この違いが日本と海外における柔道によるケガの箇所や頻度などの違いとなって現れるのではないだろうか。

そもそも、柔道によるケガに関する報告は少なく、我々の知る限りでは、複数の国の柔道家を調査対象とした柔道による傷害の比較調査は無かった。そこで著者らは、以前、日本とドイツでの柔道の練習方法と柔道によるケガを、アンケート調査により比較分析したが、本研究では、対象をさらにアメリカ合衆国まで広げ、傷害予防のための基礎的資料を得ることを目的とした⁽¹⁾。

本研究のアンケート調査は日本、ドイツそしてアメリカ合衆国の合計2097人の柔道家から集めた。なお、現在のドイツにおける柔道競技者登録人口は約20万人であり、日本とほぼ同数であるが、アメリカ合衆国でのそれは約3万人でかなり少ない。

主な結果は以下に示すとおりである。

(a) 全般的傷害率

ドイツでは15%、日本では34%、そしてアメリカ合衆国では50%の柔道家が、調査対象とされた3年間に医者などの専門家の治療を必要とするケガは無かったと回答した。また、1人あたりのケガの頻度は、ドイツでは平均2.4回、日本では平均1.1回、そしてアメリカ合衆国では1.2回であった。

(b) ケガの種類

今回研究対象となった全ての国で「関節包や靭帯の傷害」が最も多く、その次に「脱臼」が多かった。全ての傷害のうちドイツでは13%、アメリカ合衆国では14%が「筋肉の傷害」であるのに対し、日本では「筋肉の傷害」が僅か3.9%であった。また、「骨折」の割合はドイツでは2.5%であるのに対し、日本では14%、アメリカ合衆国では8.3%であった。

(c) 練習の再開

ドイツでは81%、日本では70%、そしてアメリカ合衆国では54%の調査対象者が、ケガが完治する以前に練習を再開したと回答した。

(d) 慢性痛

18才以上の調査対象者のうち「慢性の筋肉痛」があると答えたのは、日本では0.3%、アメリカ合衆国では0.4%であるのに対し、ドイツでは34%であった。

(e) 補強運動

12才以上の調査対象者のうち、ドイツでは28%、日本とアメリカ合衆国ではともに90%が柔軟運動を行っていると回答した。つまり、日本やアメリカ合衆国ではドイツの3倍以上が柔軟運動を行っていることになる。

Introduction

Judo, meaning "gentle way", is a modern Japanese martial art and combat sport, which originated in Japan in the late nineteenth century. Its most prominent feature is its competitive element, where the object is either to throw one's opponent to the ground, immobilize, or otherwise subdue one's opponent with a grappling maneuver or to force an opponent to submit by joint locking the elbow or by applying a choke. Judo has its roots in Jujitsu, which was the martial art of the Samurai. The founder of Judo, Jigoro Kano, removed most life-threatening and potentially dangerous techniques and formed a martial art form that could be trained without injuring the partner. The main principle is to achieve most effect by least effort. Judo spread quickly to Europe and has gained popularity worldwide. As of 2012 about 200 countries are members of International Judo Federation. Since 1964 for men and since 1992 for women Judo is officially an Olympic sport⁽²⁾.

Japanese training and combat style are considered as the traditional way of Judo, whereas other countries have influenced the international competition sport of Judo and also developed other training philosophies and different styles in the internationalization process. These differences could cause different risk profiles in Japan and in other countries.

Reports on injuries in Judo are scarce and often restricted to a small group of athletes⁽³⁻¹¹⁾. To

our knowledge there is no survey comparing injuries in judo by country on an extended scale.

The objective of this study is (a) to elucidate the injury and training profile of judo athletes in different countries, and (b) to compare these results in order to provide a basis for injury prevention.

Material

The material consists of data from 2097 Judo athletes from Germany, Japan, and USA.

We started our study based on an extensive study of the injury profile of German Judo athletes, which had been performed earlier by one of the authors⁽³⁾.

800 German, 898 Japanese, and 399 US American recreational and competitive Judo athletes were investigated with a retrospective questionnaire (Table 1).

Table 1: Demographics

age	Japan	Germany	USA
< 7	9	0	6
7- 11 years (n)	189	205	57
12-17 years (n)	317	206	97
18-29 years (n)	270	198	58
> 29 years (n)	113	191	173
No age information			8
Total	898	800	399

Method

A standard questionnaire was distributed through the judo Organizations of each corresponding country.

The questionnaire consisted of questions in 13 categories.

We asked about injuries in the last three years. Only “serious” injuries that were treated by medical doctors or similar specialists were considered. Other “light” injuries were not taken into account.

In addition, we asked about age, sex, judo-grade, amount of judo experience (in years), amount of training per week, level of competition and the existence of chronic pain. We also inquired about types of supplementary training and about the state of recovery before restarting training after an injury.

The questionnaire was distributed in printed format on paper as well as an editable pdf format which could be returned to us over the internet.

The collected data were partly managed in a databank which then analyzed using IBM SPSS Statistics.

Results

Overall injury rate:

15% (n = 120) of German, 34% (n = 300) of Japanese and 50% (n=199) of US American Judo athletes had no serious injury in the previous 3 years.

The average number of injuries was 2.4 per person in Germany, 1.1 in Japan and 1.2 in the USA.

Injury location:

A comparison of injury location between Japan and Germany is shown in Fig. 1.

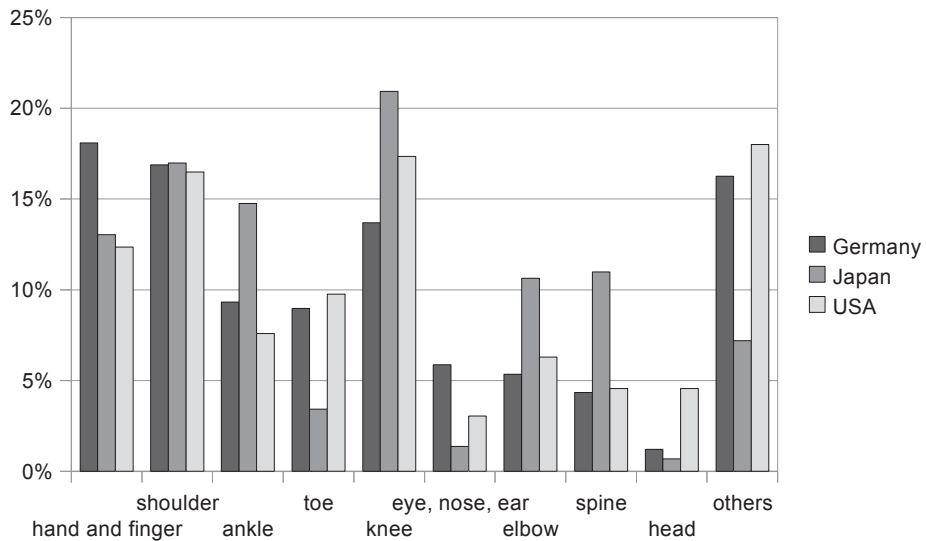


Fig. 1 Injury location in %

Type of injury:

Capsule and ligament injuries were most common in all three countries followed by dislocations. 13% of all injuries were muscle injuries in Germany and 14% of all injuries were muscle injuries in the USA whereas only 3.9% were muscle injuries in Japan. The rate of fracture was 2.5% in Germany and 8.3% in the USA, whereas it was 14% in Japan.

Factors influencing injury rate:

The incidence of injuries by activity was similar in all three countries. Most injuries occurred during the sparring form in Judo called "Randori" (Fig. 2).

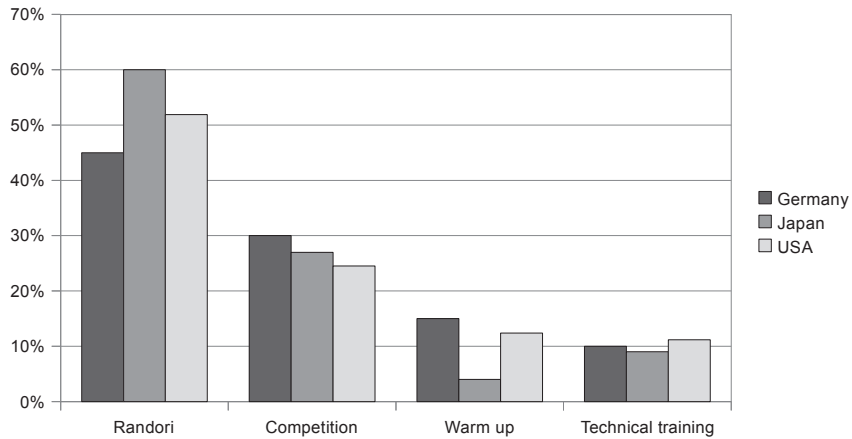


Fig. 2 Background of injury in %

Restarting Judo training after injury:

81% of German, 70% of Japanese and 54% of US American Judo athletes answered in our questionnaire that they had restarted Judo training without fully recovering from injury.

Chronic pain:

0.3% in Japan and 0.4% in the USA answered that they suffered from chronic muscular pain whereas in Germany it was 34% (Fig. 3).

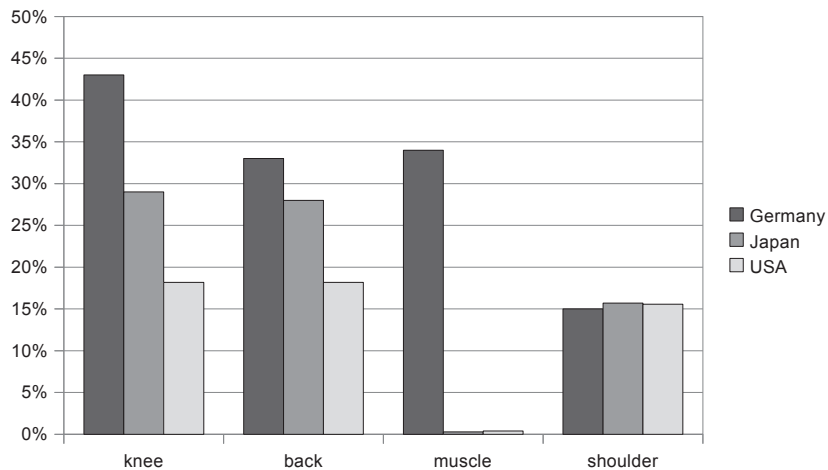


Fig. 3 Chronic pain of adult Judo athletes over 18 years old in %

Stretching:

28% of athletes over 12 years old performed stretching in Germany compared with 90% of

athletes in Japan and in the USA.

That is in Japan and in the USA about three times as many Judo athletes performed additional stretching as in Germany.

Consultation with specialists:

11% of German, 33% of Japanese and 38 % of US American athletes answered that they have consulted a specialist in sports medicine since they have started Judo.

Discussion

This is the first study comparing the style and injury profiles of three different countries. At present about 200,000 Judo athletes are registered with the German Judo Federation and approximately the same numbers of Judo athletes are registered with the All Japan Judo Federation. The Judo population of the USA is estimated to be much less than the ones in Germany and Japan⁽¹²⁾.

So far we have not been able to collect as many samples as we would have like to in the United States within the limited data collection period of about one year.

Furthermore demographic distribution of the US Data is different from the one of Germany and Japan. It is therefore very much possible that the results mentioned above are much influenced by this.

As indicated above, the average number of injuries was 2.4 per person in Germany, 1.1 in Japan and 1.2 in the USA.

That is, we found that the injury rate is substantially lower in Japan and in the USA compared to Germany.

This "could" come from the fact that Judo training in the US has had more Japanese influence than in Germany.

There are more Japanese immigrants and coaches in the US than in Germany.

However, the higher injury rate above could simply mean that the German athletes simply consult physician more often.

In our survey the Judo athletes counted the number of injuries for which they consulted medical doctors. That is, there were no objective criteria to select the injuries to count.

Let us, for now, assume that the higher injury rate in Germany is "real".

Japanese male Judo athletes train 12 hours a week and female athletes 15 hours a week on average.

In the German study above we did not study how many hours a week the athletes train in Judo. However, we estimate that Japanese Judo athletes train several times more than German and US american athletes. Assuming that our estimation is correct, it is surprising that the injury rate is much lower in Japan than in Germany.

Some possible reasons for this are the following:

- (1) In Germany 15% of the injuries occurred during so called “warming up ball games” such as basketball or soccer. These are played instead of conventional and judo-specific warming up. Judo-specific warming up includes special exercises that are designed to train muscles and movements needed in Judo. In Japan and in the USA practically no ball games are performed while warming up.
- (2) More conventional as well as judo-specific warm up are performed in Japan and in USA. For example, 90% of Judo athletes practice stretching at every training session in Japan and in USA, whereas only 28% do so in Germany.
- (3) The distribution of our data with regard to age is similar for Germany and Japan. However, we estimate that Japanese athletes train “much more” in terms of the training hours, as mentioned above. This leads to the fact that Japanese Judo athletes are generally more “experienced” than German athletes. This fact might have some contribution to the lower injury rate in Japan.
- (4) Finally, although this factor falls beyond the scope of this study, we imagine that mental attitude to Judo training could also be playing some role. That is, the goal of judo training in Japan is to perfect one's own technique, whereas the main goal of judo training in other countries is to “win” in competition. The mental attitude of the latter might be causing unnatural application of judo techniques relying too much on muscle power, which in turn causes more injuries.

The much lower number of muscle injuries in Japan "might" be indicative of this. 13% of all injuries were muscle injuries in Germany and 14% of all injuries were muscle injuries in the USA whereas only 3.9% were muscle injuries in Japan, as is indicated above.

The number of people who suffer from chronic pain is significantly higher in Germany than in Japan and in USA. Due to the absence of objective criteria to count chronic pain, it can also mean that German athletes simply counted more than the athletes in Japan and in USA.

A different injury location (Fig. 1) in the three countries seems to reflect, at least partly, preferred judo techniques.

A rather high percentage of injury occurred during so-called “warming up ball games” in Germany. It is rather questionable whether some ball game can replace a traditional warming up seen from the point of view of sports medicine. What makes the situation worse is that these ball games are usually performed on the judo mat with judo clothes without shoes. In other words, they are performed with improper equipment and in inappropriate circumstances. From an injury prevention point of view, we recommend conventional and judo-specific warming up rather than “warming up ball games” .

The rate of fractures was clearly higher in Japan (14%) than in Germany (2.5%) and in the USA

(8.3%). Additionally children in the group up to 11 had a higher injury rate in Japan. The increased fracture risk combined with the higher overall injuries in Japan among the younger athletes might indicate that Judo training in Japan is different and possibly harder for this age group.

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