

# Causes and types of injuries during *ippon-seoi-nage* throw

## Authors' Contribution:

- A** Study Design
- B** Data Collection
- C** Statistical Analysis
- D** Manuscript Preparation
- E** Funds Collection

Wojciech Rukasz<sup>ABCD</sup>, Stanisław Sterkowicz<sup>DE</sup>, Artur Kłysz<sup>CD</sup>

Department of the Theory and Methodology of Combat Sport, University School of Physical Education in Cracow, Cracow, Poland

**Source of support:** Departmental sources

**Received:** 23 September 2010; **Accepted:** 7 December 2010; **Published online:** 15 February 2011

## Abstract

### Background and Study Aim:

The purpose of this study was to assess the kind and causes of the injury profile of senior male judoka competing at the international level during *ippon-seoi-nage* throw.

### Material/Methods:

Subjects consisted of 52 competitors participating in the Olympic Games, World and European Championships and Polish National Individual Judo Championships. The so-called epidemiological standardized medical history was used in this study. Simple check-off forms were used to collect the injury data, including injury type, location, and mechanism.

### Results:

Competitors sustained 448 injuries in total. Sixty-five injuries happened during the *ippon-seoi-nage* throw. It was found that: 1) mostly appeared to be sprains of the knee joint during the execution of the *ippon-seoi-nage* throw, 2) the most frequent cause of injuries was during sports contests, 3) injuries mostly occurred in a competitor who was attacking on *ippon-seoi-nage*, 4) there is a high risk of repeated injuries during the *ippon-seoi-nage* throw mostly caused by too quick a resumption of physical activities after the sustained trauma.

### Conclusions:

Possible applications of this work are preventive actions against injuries. Coaches should use this more to exactly identify the mechanisms of injuries. We would like emphasize that routine post-trauma treatment and rehabilitation procedures restore judoka to fitness only to some degree. From the trainer's perspective, it has been suggested that it is necessary and indispensable to individualize and modify the training course process of the judoka who had accidents.

### Key words:

judo • injuries • *ippon-seoi-nage* throw

### Author's address:

Wojciech Rukasz, Department of the Theory and Methodology of Combat Sport, University School of Physical Education, Al. Jana Pawła II 78 Str., 31-571 Cracow, Poland; e-mail: wrukasz@poczta.fm

## BACKGROUND

*Ippon-seoi-nage* (One Arm Shoulder Throw) is one of the most popular throws in judo. It is classified as a hand throwing technique-Te-waza. This throw belongs to the first group of The Gokyo no Waza. *Ippon-seoi-nage* involves a one handed grip and requires a strong sleeve pull and tight locking of uke's arm. This throw is learned at the beginning of the career of judoist. It was found that during the Olympic games in Atlanta 1996 and Sydney 2000 the *ippon-seoi-nage* technique was the most frequently applied. The competitors mostly won a scoring advantage using this technique [1]. Frequent use of this technique may lead to injuries. There is high

risk of injuries during the *ippon-seoi-nage* throw [2]. It was ascertained that the *ippon-seoi-nage* technique increased risk of injuries during tournament and training sessions. According to the earlier analysis taking judo techniques into account as a source of body injuries, it was stated that during *ippon-seoi-nage* throw resulted in the highest number of injuries [3]. The aim of present study is to demonstrate the risk of the injuries during the *ippon-seoi-nage* throw.

## MATERIAL AND METHODS

The research material was a group of 52 top-level judo contestants participating in the Olympic Games, World

**Table 1.** Distribution of injury number by type of injury during the *ippon-seoi-nage* throw.

Type of injuries	Number of injuries	Number of injuries in attack	Number of injuries in defense
<b>Sprain (distorsio)</b>			
Knee Joint	15	15	–
Glenohumeral Joint	5	–	5
Acromioclavicular Joint	5	–	5
Ankle joint	3	3	–
Elbow joint	1	–	1
Sternoclavicular joint	1	–	1
<b>Total</b>	<b>30</b>	<b>18</b>	<b>12</b>
<b>Strain-tear</b>			
Muscles of the neck	9	–	9
Muscles of the back –lumbar part	5	–	5
Muscles of the back-thoracic part	3	3	–
Muscles Intercostales	2	2	–
Muscle tibialis posterior	1	1	–
Abdominal muscles	1	–	1
<b>Total</b>	<b>21</b>	<b>6</b>	<b>15</b>
<b>Fracture</b>			
Patella	3	3	–
Rib	1	1	–
Tooth	1	–	1
Wrist	1	1	–
<b>Total</b>	<b>6</b>	<b>5</b>	<b>1</b>
<b>Contusion</b>			
Knee	3	3	–
Elbow	1	–	1
Coccyx	1	1	–
<b>Total</b>	<b>5</b>	<b>4</b>	<b>1</b>
<b>Subluxation</b>			
Glenohumeral Joint	1	1	–
<b>Luxation</b>			
Sternoclavicular joint	1	–	1
<b>Strain-rupture</b>			
Muscles Intercostales	1	1	–
<b>Total</b>	<b>65 (100.0%)</b>	<b>35 (53.8%)</b>	<b>30 (46.2%)</b>

and European Championships and Polish National Individual Judo Championships. Competitors sustained 448 injuries in total. Sixty-five injuries happened during the *ippon-seoi-nage* throw. The so called epidemiological standardized medical history and other medical documentation were used in this study. Simple check-off forms were used to collect the injury data, including injury type, location, and mechanism.

## RESULTS

Table 1 shows the type and the number of injuries during *ippon-seoi-nage* throw in attack and defense. Detailed analysis of results disclosed that the most frequent injuries were sprains of the joints (46.2%) and strains (32.3%) of all injuries. Mostly injuries occurred in competitors who were attacking on *ippon-seoi-nage* (53.8%) of all injuries.

**Table 2.** Distribution of injury rates by causes of injury during the *ippon-seoi-nage* throw.

Causes of injuries	Number of injuries	Rate of injuries
Sports contest	52	80.0
Too quick a resumption of physical activities after the sustained trauma	11	16.9
Incorrect execution of the technique	1	1.5
Wrong state of tatami	1	1.5
<b>Total</b>	<b>65</b>	<b>100.0</b>

and rehabilitation procedures restore judoka to fitness only to some degree. From the trainer's perspective, it has been suggested that it is necessary and indispensable to individualize and modify the training course process of the judoka who had accidents [4]. One decisive criterion of the ability to compete should be the scores in the Special Judo Fitness Test (SJFT). Judo coaches can compare individual results in SJFT with the results presented on the classificatory table [5]. It can help coaches using the SJFT to classify their athletes and to monitor their physical fitness and progress. Another possible application for this table is the rehabilitation process,

**Judo** – meaning “gentle way” is a modern Japanese martial art and combat sport, that was created in Japan in 1882 by Dr Kano Jigoro.

***Ippon-seoi-nage*** – (One Arm Shoulder Throw) is one of the most popular throws in judo, classified as a hand throwing technique *Te-waza*.

**Table 3.** Causes of repeated injuries during the *ippon-seoi-nage* throw.

Causes of injuries	One time occurred injury	Repeated injury*	Total
Sports contest	42	10	52
Too quick a resumption of physical activities after the sustained trauma	0	11	11
Incorrect execution of the technique	0	1	1
Wrong state of tatami	0	1	1
<b>Total</b>	<b>42 (64.6%)</b>	<b>23 (35.4%)</b>	<b>65 (100.0%)</b>

\* Repeated injury indicates that it occurred more than once in the same region of the body.

The most injured region of the body was the knee joint (23.1%) of all injuries. On the basis of the received data it was stated that the most frequent cause of injuries was during sports contests (80%) of all injuries (Table 2). Analysis of the research material indicates that there is a high risk of repeated injuries during the *ippon-seoi-nage* throw mostly caused by too quick a resumption of physical activities after the sustained trauma (16.9%) of all injuries (Table 3). On the basis of the research 65 injuries in total occurred more frequently during training sessions 35 (53.8%), than in tournaments 30 (46.2%).

## DISCUSSION

We are living in a time when interest in sports has never been higher. Congruently, our knowledge about injury and illness as a result of sport activity has also increased. Possible applications of this work are preventive actions against injuries. Through it, coaches should be able to exactly identify the mechanisms of injuries. We would like to emphasize that routine post-trauma treatment

i.e., coaches can compare athletes' results on the SJFT before injury and after rehabilitation in order to establish the progress to more complex judo specific exercises according to the athletes physical condition. To be successful in rehabilitation, exercises must also be similar to the specific demands of the individual sport or activity.

## CONCLUSIONS

The conclusions that can be drawn from this study are the following: 1) most injuries appeared to be sprains of the knee joint during the execution of the *ippon-seoi-nage* throw, 2) the most frequent cause of injuries were sports contests and too quick a resumption of physical activities after the sustained trauma, 3) mostly injuries occurred in a competitor who was attacking during a *ippon-seoi-nage* throw, 4) there is a high risk of repeated injuries during the *ippon-seoi-nage* throw mostly caused by too quick a resumption of physical activities after the sustained trauma, 5) injuries occurred more frequently during training sessions than during tournaments.

## REFERENCES:

1. Sterkowicz S, Błach W: An analysis of age, manner of victory and efficient actions during the Olympic Judo Tournament in Sydney in 2000. A paper presented at 2nd Judo Conference of International Judo Federation Munich 24 July 2001
2. Sterkowicz S: Poziom sportowy a częstość i charakter wypadków u osób uprawiających judo. *Wychowanie Fizyczne i Sport* 1985; 3: 59–75 [in Polish]
3. Rukasz W: Uszkodzenia urazowe ciała i ich przyczyny u zawodników judo reprezentujących wysoki poziom sportowy. Praca doktorska, AWF, Kraków, 2002 [in Polish]
4. Sterkowicz S, Rukasz W: Typowe urazowe uszkodzenia ciała i ogólne wskazania w rehabilitacji ruchowej judoków. *Medycyna Sportowa* 1996; 11,12: 12–17 [in Polish]
5. Franchini E, Vecchio F, Sterkowicz S: A Special Judo Fitness Test Classificatory Table. *Arch Budo* 2009; 5: 127–29