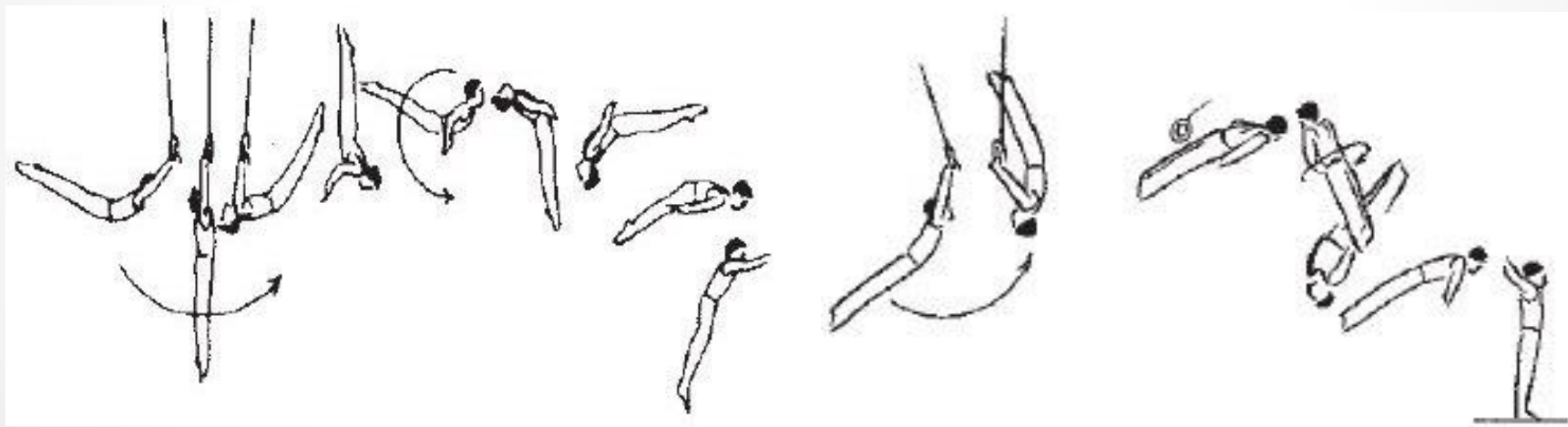


# NATIONAL SPORTS ACADEMY ‘VASSIL LEVSKI’ - SOFIA

**Comparative kinematic analysis of the dismounts -  
double salto backward stretched and double salto backward  
stretched with 360° turn on rings in artistic gymnastics**



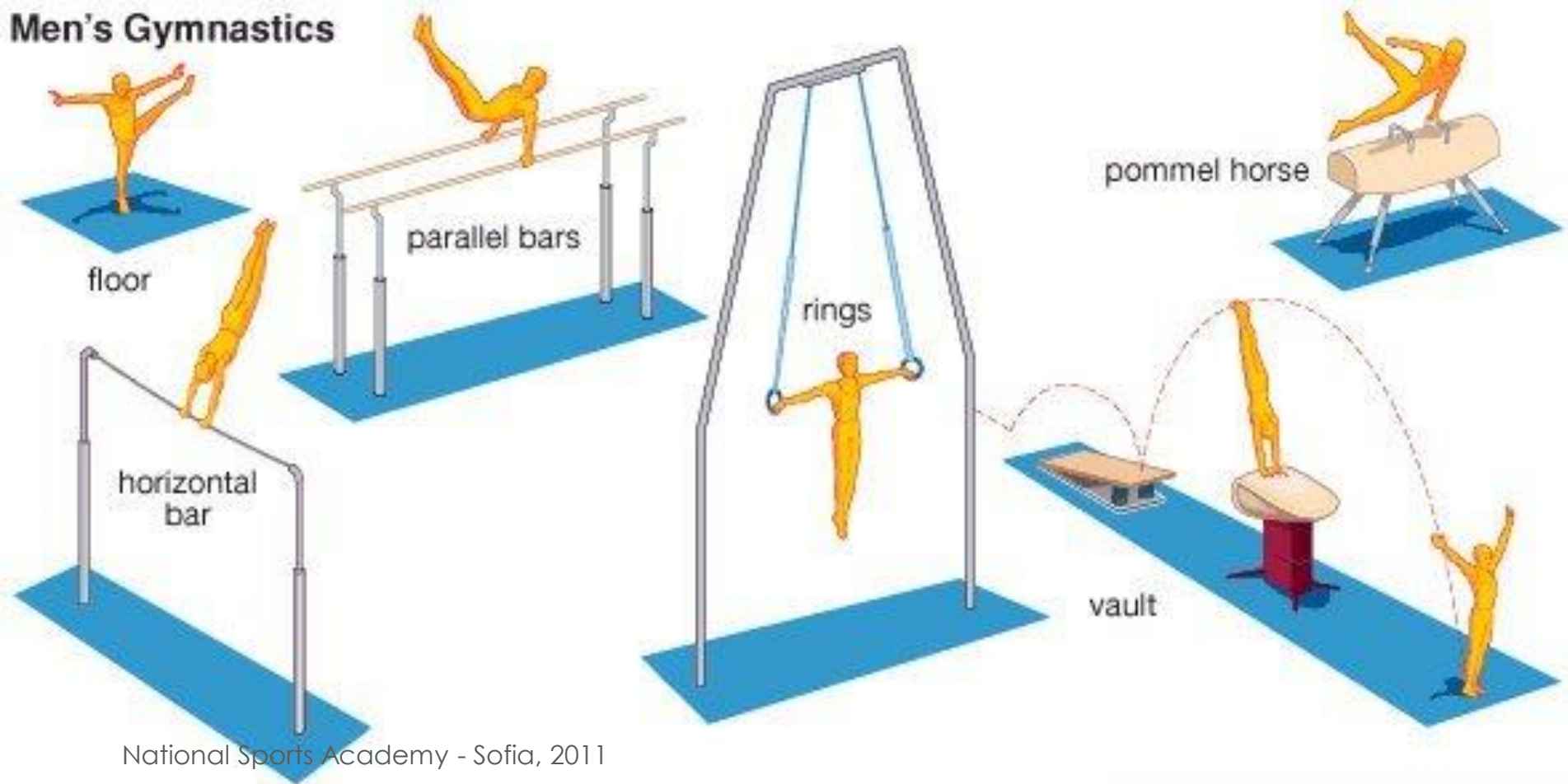
**Author:** Stefan Kolimechkov, №26433

**Supervisor:** Assoc. Prof. Ilia Kiuchukov, PhD

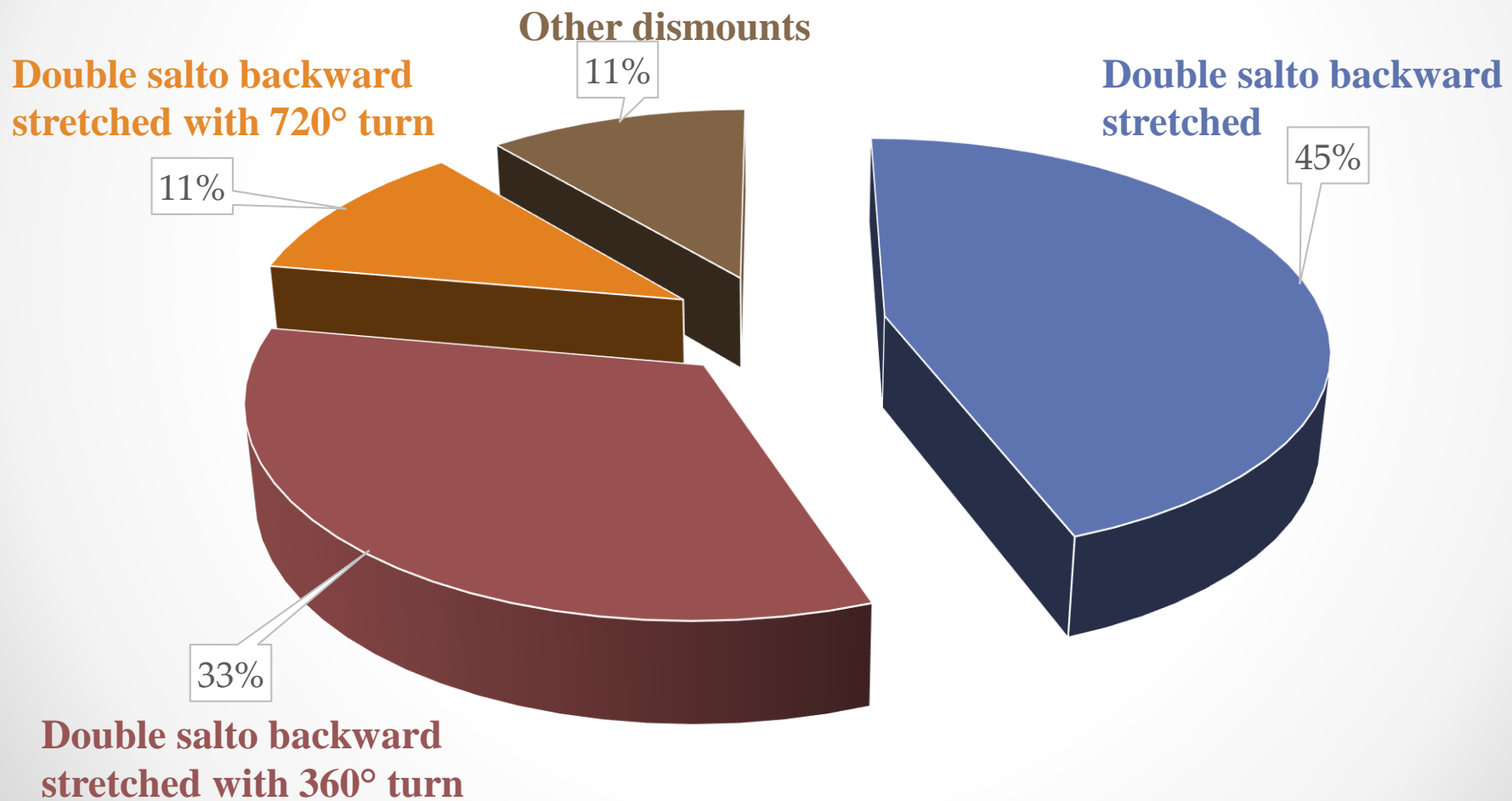
# RINGS

## ARTISTIC GYMNASTICS

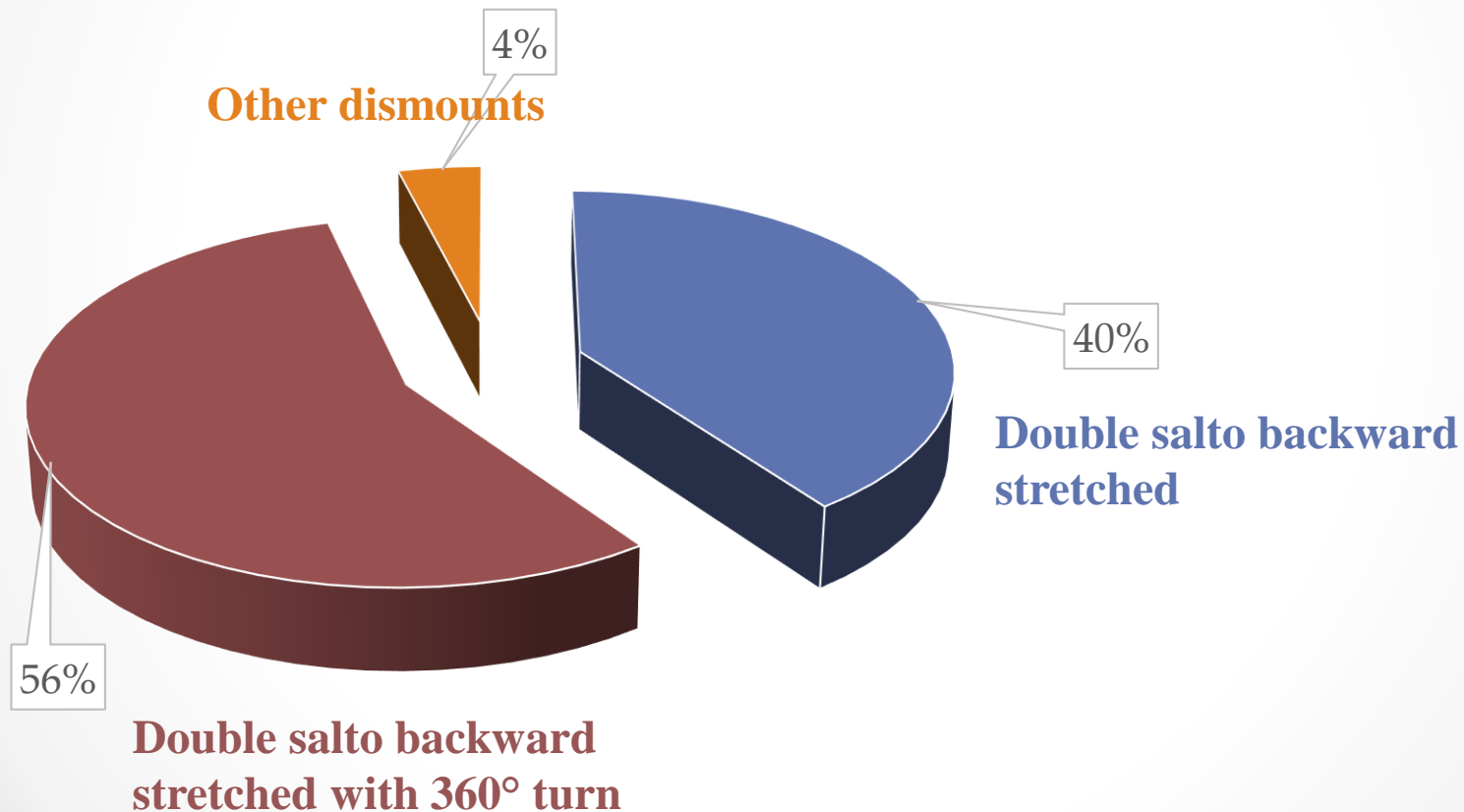
### Men's Gymnastics



# Rings dismounts which were performed by the medallists of the last three Olympic games



# Rings dismounts which were performed by the World championship medallists of the last ten years

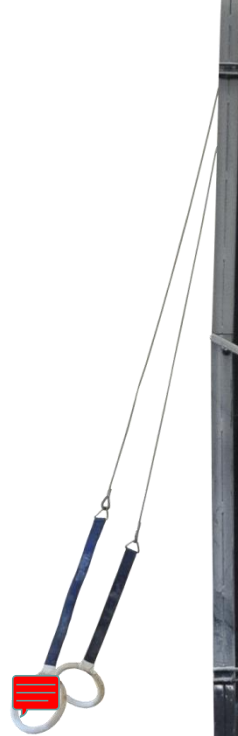


# Purpose of the study

The purpose of this study was to conduct a comparative kinematic analysis of the dismounts - double salto backward stretched and double salto backward stretched with a 360° turn on rings, in addition to giving a summary of methodological recommendations for their training.

# Objectives and tasks

- Calculating and comparing kinematic variables of the main joints (shoulder, hip and ankle);
- Describing and analysing the technique of the exercises;
- Offering a progressive methodology for achieving an adequate technique for the exercises.



TO SEE THIS ANIMATION,  
DOWNLOAD THE  
POWERPOINT FORMAT  
[www.stk-sport.co.uk](http://www.stk-sport.co.uk)

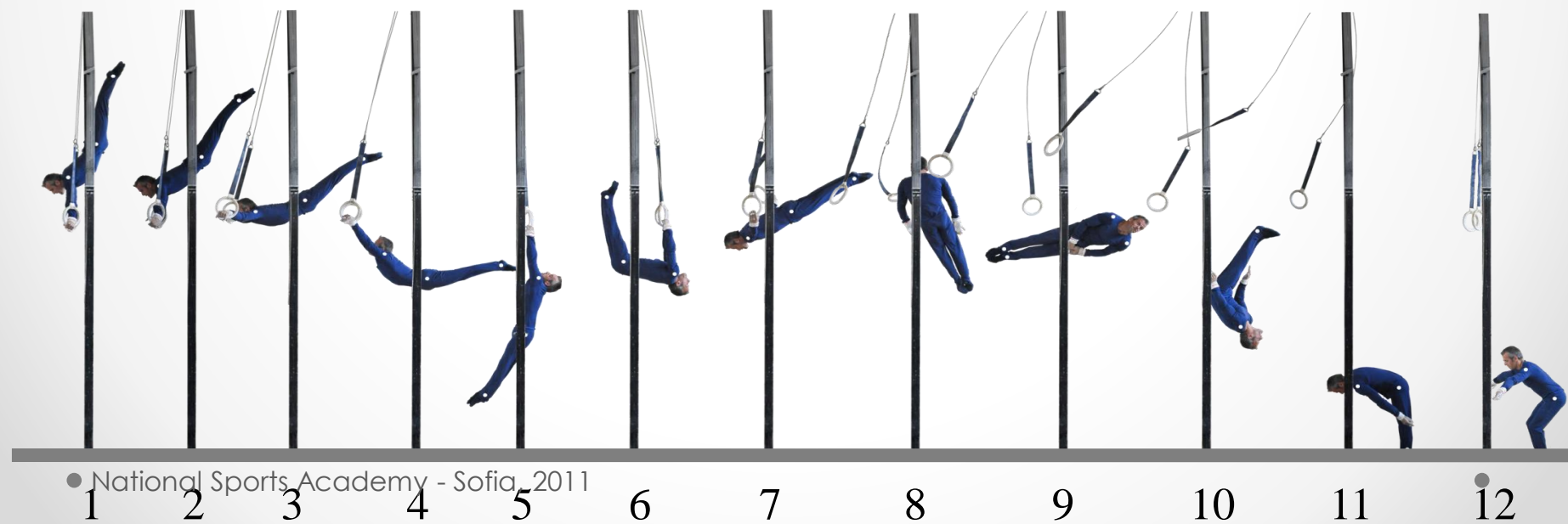
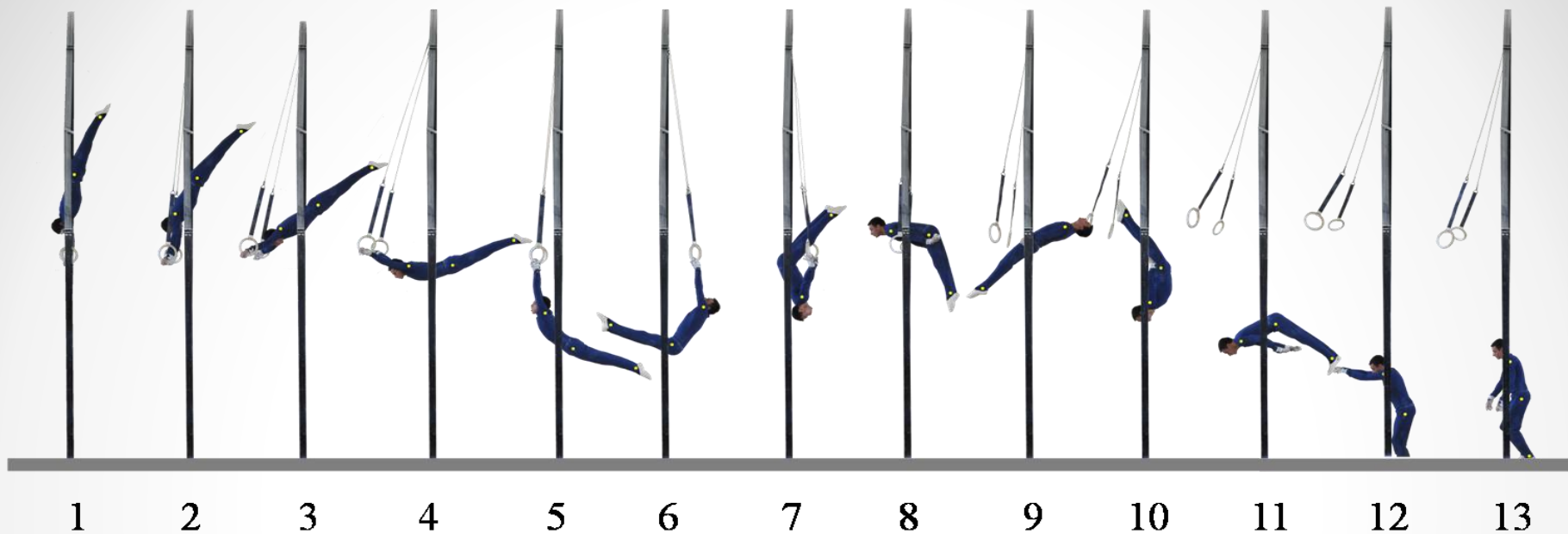




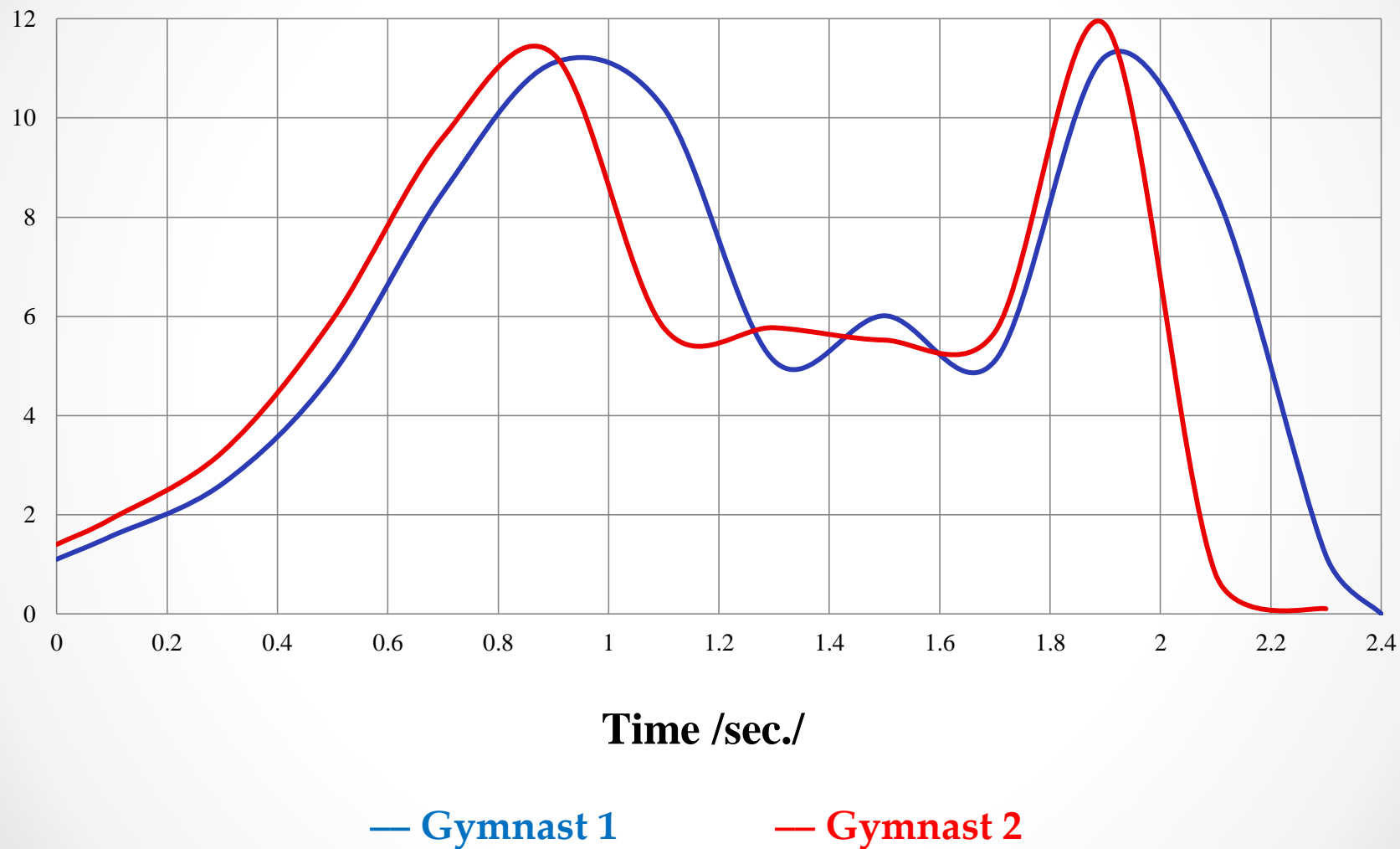
TO SEE THIS ANIMATION,  
DOWNLOAD THE  
POWERPOINT FORMAT  
[www.stk-sport.co.uk](http://www.stk-sport.co.uk)



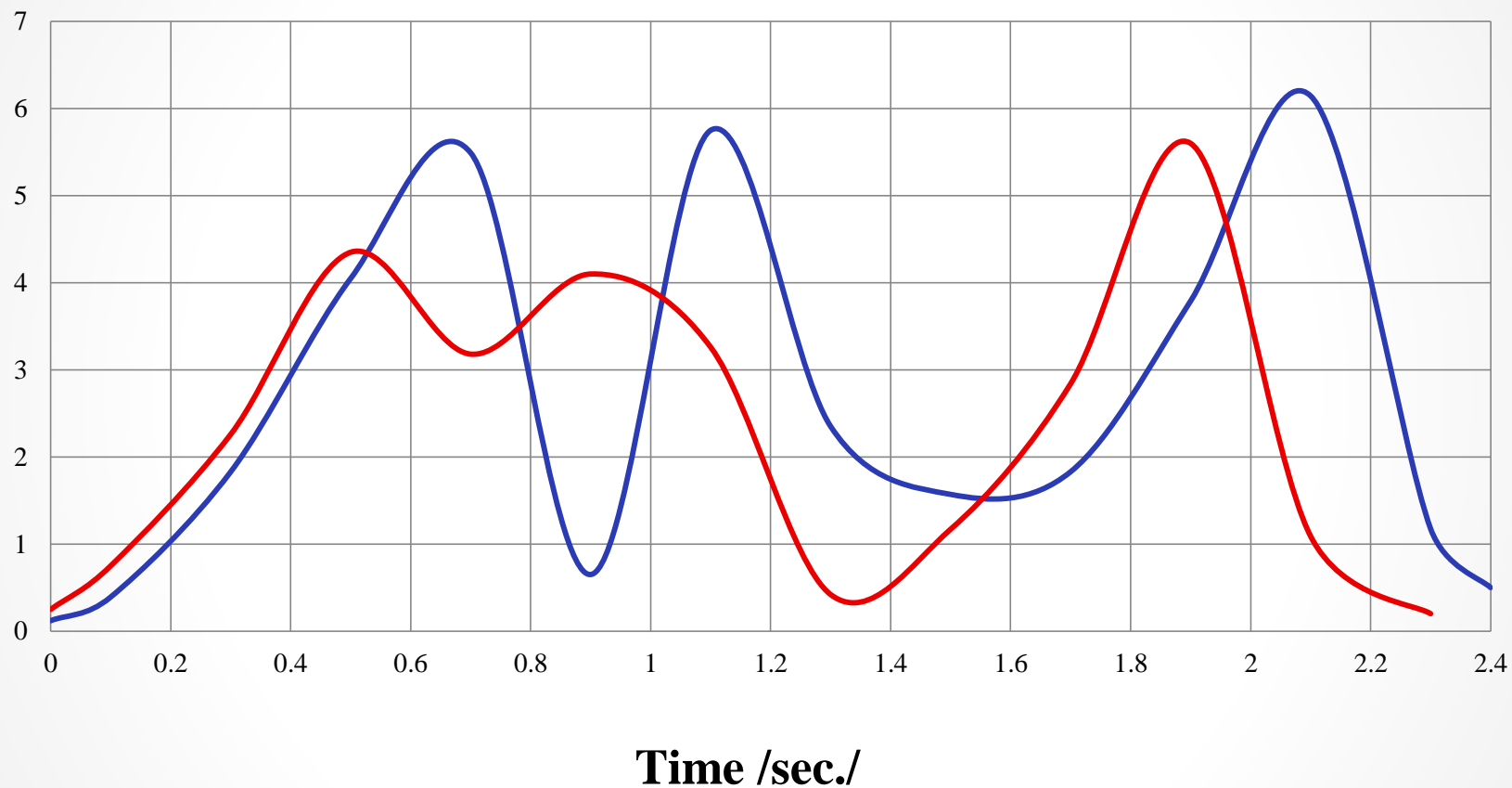
# Results



## Speed [m/s] of the ankle joints



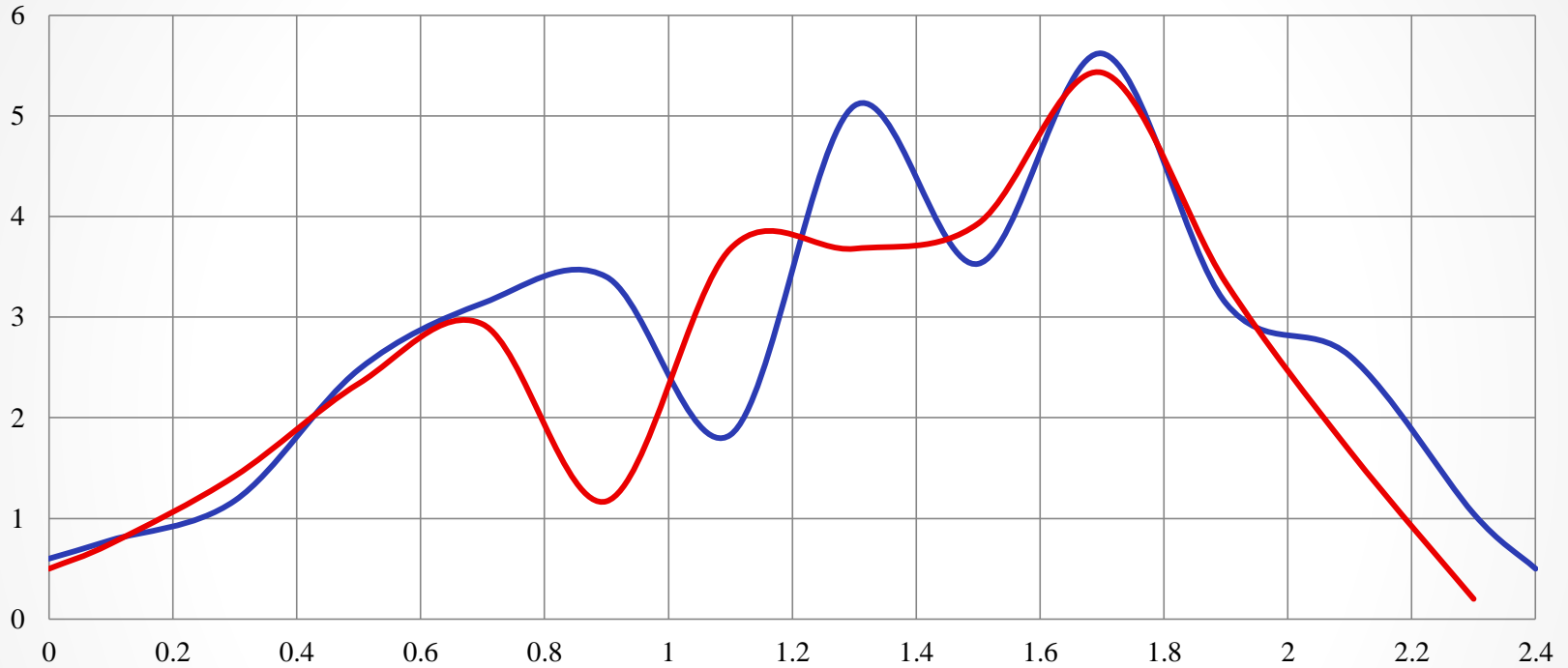
## Speed [m/s] of the hip joints



— Gymnast 1

— Gymnast 2

## Speed [m/s] of the shoulder joints



Time /sec./

— Gymnast 1

— Gymnast 2



1

2

3

4

5

6

7

8

9

10

11

12

13

**Phase I**

**Phase II**

**Phase III**



1

2

3

4

5

6

7

8

9

10

11

12

# I. Preparatory phase





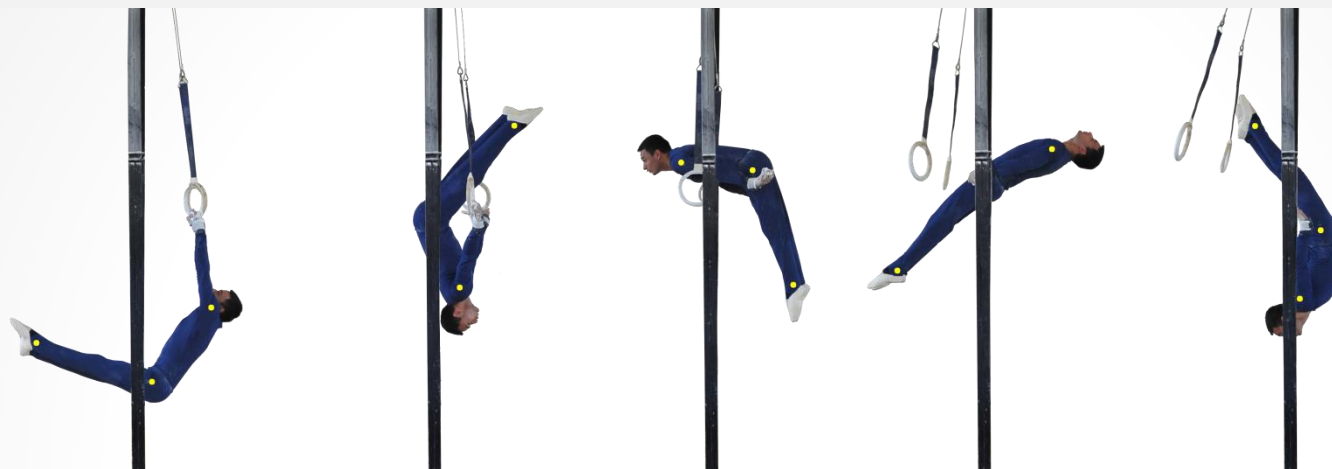
**Gymnast 1**

**Gymnast 2**

## II. Execution phase

Gymnast 1

11.11



11.29



Gymnast 2



### III. Landing phase



# Methodology of training

- Performing a dismount – double salto backward pucked (open tucked) on rings from handstand;



- Performing a dismount – one and a half salto backward stretched to flat back on soft mats;



- On a trampoline – performing double salto backward stretched with a spotting rig;
- Performing the skill from a trampoline into a gymnastics pit or onto soft mats;





- Performing double salto backward stretched on a trampoline;



- Performing double salto backward stretched on rings above into a gymnastics pit;
- Performing the skill from a handstand or a backward giant swing, landing on soft mats;



- Performing double salto backward stretched on rings requiring the gymnast's body to remain absolutely straight;
- Performing double salto backward stretched with a  $360^\circ$  turn from a trampoline into a gymnastics pit;
- Performing the skill from handstand on rings into a gymnastics pit;

- Performing double salto backward stretched with 360° turn from a handstand or a backward giant swing, landing on soft mats;
- Performing the skill in real conditions.



TO SEE THIS VIDEO,  
DOWNLOAD THE  
POWERPOINT FORMAT  
[www.stk-sport.co.uk](http://www.stk-sport.co.uk)



## Possible mistakes:

- Not enough swing, therefore the rotation of the skill cannot be finished;
- During the leg kick stage, the hang position is not sufficient and the gymnast's head is out, therefore, the rotation cannot be completed;
- Bending arms just before the take off (at the beginning of the execution phase);
- When the first part of the salto is lower than normal, which means that the hip joints are lower than the level of the rings, the exercise cannot be successfully completed.
- If the extension from the hip joints is performed at too late stage, the head and chest will enjoy no advantage in the subsequent backward movement.

# Conclusions and recommendations

- The gymnast should possess a technique which is adequate for the performance of basic gymnastics skills, in order then to learn and execute these additional and more demanding exercises successfully;
- The critical issue regarding the analysed exercises is the amplitude of swing combined with the strength of the leg kick;

# Conclusions and recommendations

- The analysed elements require an adequate technique, which will allow for progression to more difficult skills.
- We recommend that our methodology for learning the analysed exercises should be taught in the same progressive order.

# Conclusions and recommendations

- We recommend that the move of the gymnast concerning twisting should start at the very end of the leg kick (the moment of releasing the rings) when performing the dismount with a  $360^\circ$  turn.
- We recommend that any technical mistakes during the training process should be eliminated as soon as possible.

# Thank You!

