Fujitsu Judging Support System Webinar Summary

The following notes are a summary of a European Gymnastics Union webinar on the Fujitsu Judging Support System presented by Donatella Sacchi (WTC President) and Ayako Kawahito (Category 4 Brevet from Japan) on September 6, 2026.

The webinar can be found at the following link:

https://youtu.be/cxba61k3lsU?si=6BM2fyw59jDBYMhA

Introduction - Why Judging Support System (JSS) Is Needed

- Overall purpose is to ensure that judging has Fairness, Transparency, and Consistency as defined below:

Fairness

- Fairness in judging is achieved because all gymnasts are being evaluated using a single standard, which is the parameters within JSS.

Transparency

- The long-term goal is for JSS to be able to release a D Score within 10 seconds of the completion of the routine, and also be able to display the information within the competition hall and on broadcast feeds.

Consistency

- Because JSS is not reliant on the human eye (i.e. due to fatigue), judging consistency is expected to improve.

JSS at the 2026 World Championships

- All apparatus supervisors will have access to JSS to confirm evaluation of the elements

- JSS is available for D Panels on Vault, Uneven Bars, and Balance Beam. Floor Exercise will be released once the evaluation of some dance elements has been finalized with the goal of being ready by the 2027 World Championships.

How Does JSS Work?

A. Basic Mechanics

- Data is acquired via cameras. Various 'Joint Points' (e.g. head, shoulder, elbow, hip, knee, foot, etc.) are identified and 'Connected'. Then, JSS can take various relevant measurements such as hip and knee angle.

- JSS uses threshold-based programming for element recognition (e.g. Hip Angle for a skill to be recognized as pike).

B. What JSS is NOT, Limitations and Workarounds

1. What JSS is NOT

- JSS is not 'generative AI" where the system learns from input data and the output changes over time.

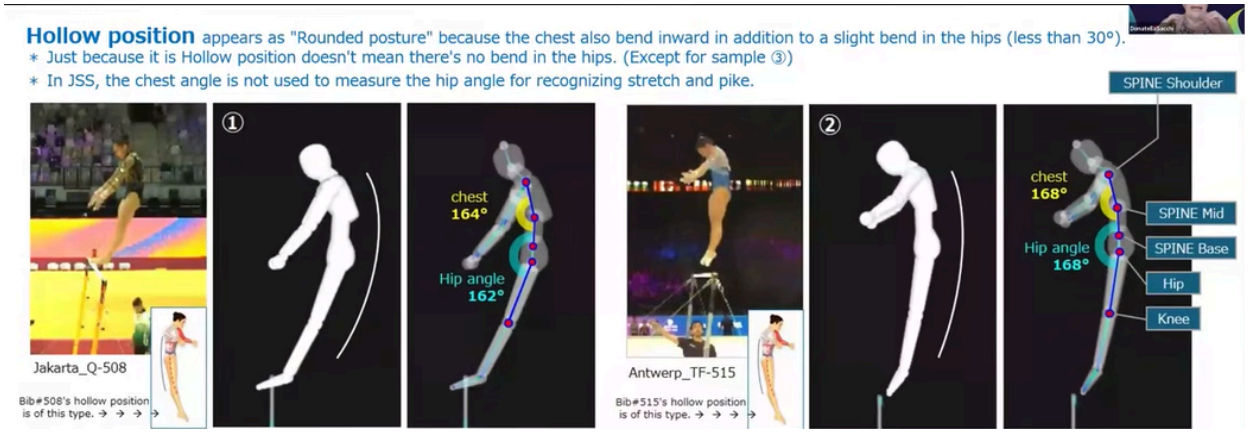
2. What Are Some Limitations of JSS and What are the Workarounds

- JSS is unable to recognize curves or create curved lines between the joint points

- Instead, JSS maps out the joints of the body and connects them using lines. Then, the angle between these lines is measured.

- Various tolerances have been programmed into JSS to match the limits of what can be seen by the human eye.

- Below is an example of how JSS evaluates a hollow position which is often seen in a layout Tkatchev element.



- In Figure 2, the relevant joint points are Spine Base, Hip, and Knee.

- The blue lines connect the joint points

- The Hip Angle(angle between Spine Base and Hip) is measured.

- Because Hip Angle is measured to be 168° beyond the 150°minimum / 30° tolerance from 180° permitted for this type of element, Stretched Position is awarded for this element

JSS Evaluation of Elements

- Examples of elements and the respective recognition criteria can be found at the link below:

https://www.gymnastics.sport/site/pages/element-recognition-index.php

- On the Webinar, Sacchi presented several elements showing an example of one that would be credited, and one that would be downgraded. Because the link above breaks down the elements in detail, my summary focuses on criteria for receiving credit, items relating to the mechanics of JSS, and how the evaluation of elements by judges in actual competition differed from a post-competition analysis by JSS.

1. Nemour / Piked Stalder to Layout Tkatchev

- Sacchi noted how JSS can measure hip angle of both the left and right leg. Nemour shows excellent symmetry with a deviation between each hip being less than 1°.
- During the All Around of the 2025 World Championships, Nemour was credited with a layout position. However, under JSS, this is credited as pike for having a hip angle of 145°, which is below the 150°minimum / 30° tolerance from 180° permitted for this type of element.

2. Double Layout Dismount

- To receive credit for layout position, gymnasts must show a stretched position when 1) The body is at horizontal following release of the bar and 2) The body is in inverted position(head down) of the second salto.
- During the All Around of the 2025 World Championships, Caylor was credited with a double layout dismount. However, under JSS, this is credited as double pike for having a hip angle of 148°, which is below the 150°minimum / 30° tolerance from 180° permitted for this type of element.

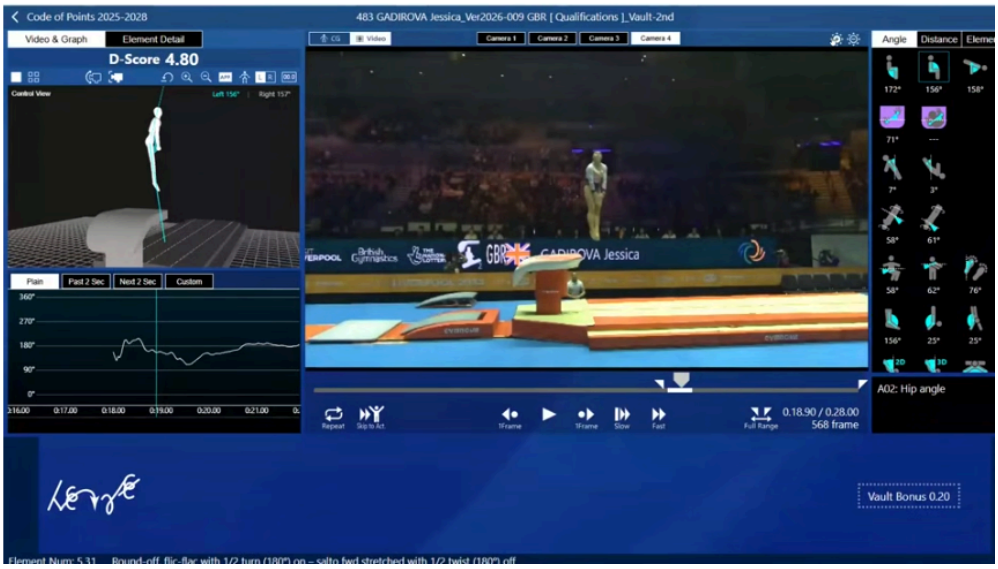
3. Front Layout on Floor Exercise

- Per biomechanics, some pike is permitted in the initial phase of this element.
- To receive credit for layout position, gymnasts must show a stretched position when she is 30° from the inverted position(head down).

4. Vault 5.31 / Round Off - ½ on + Front Layout ½

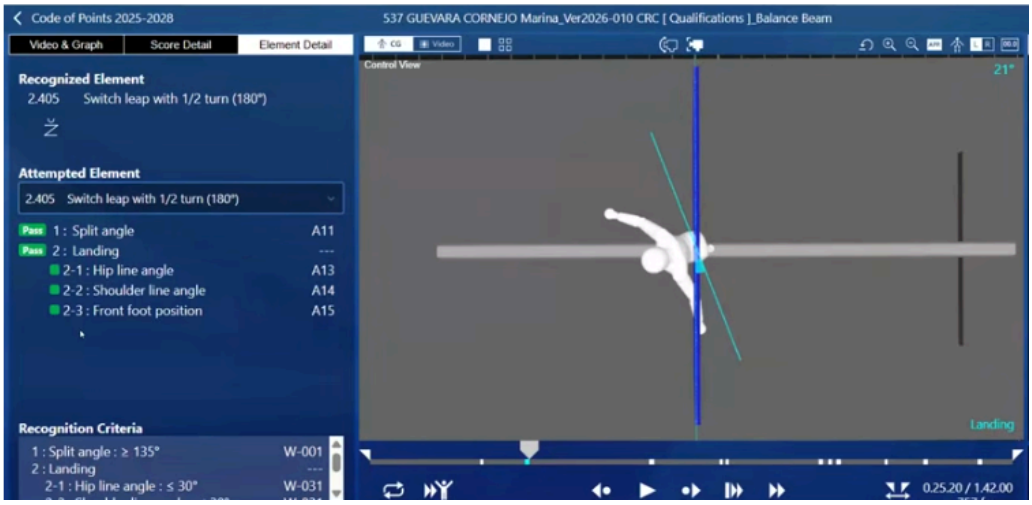
- As seen in the image below, we have a front view of the gymnast so any pike in the hips is difficult to accurately assess.
- JSS can capture the vault from different angles, such as from the side, so the hip angle can be accurately determined.

- Gadirova's hip angle exceeds the 150°minimum / 30° tolerance from 180° permitted for this vault from the stand up (head up) position through to Inverted and 60° from vertical. Therefore, credit vault as layout.



5. Switch Leap ½ on Balance Beam

- In awarding DV, the first criteria judges evaluate is whether sufficient split was shown.
- To evaluate completion of the ½ turn, judges consider the hips, shoulders, and front foot
- The body(hips and shoulders) is considered first, with the front foot becoming the decisive criteria only when there is doubt about completion of the turn by the body.
- Views from multiple angles were used to show whether the ½ turn was completed
- JSS displays criteria for elements to be credited, and whether they were fulfilled

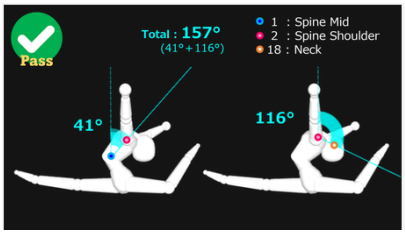


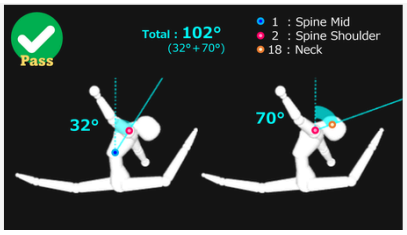
6. Side Dance Elements on Balance Beam

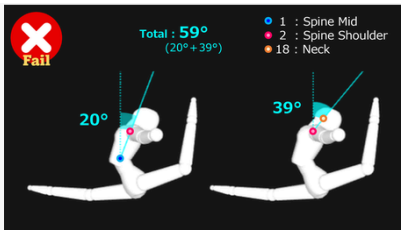
- The initial ‘loading’ of the element must be facing straight forward to the side
- Due to biomechanics, some pre-rotation is allowed on the takeoff of turning side dance elements
- Judges must consider the hips, shoulders, and both feet
- The tolerances are as follows:
    - Hip Angle ≤ 30° tolerance
    - Shoulder Angle ≤ 30° tolerance
    - Front Foot ≤ 10° tolerance
    - Second Foot ≤ 30° tolerance

7. Ring Dance Elements on Balance Beam

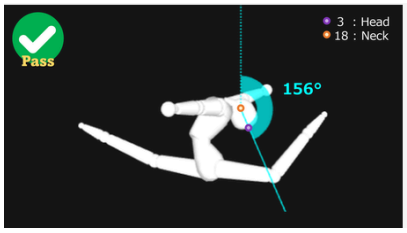
- Sacchi highlighted ring elements as a skill that judges should use JSS to verify their evaluation
- Judges can typically correctly assess height of back foot in real time
- Arch Angle is the sum of the angle between Spine Mid and Spine Shoulder joints and the angle between the Spine Shoulder and Neck Joints. The total angle must be ≥ 80° for the element to receive credit.

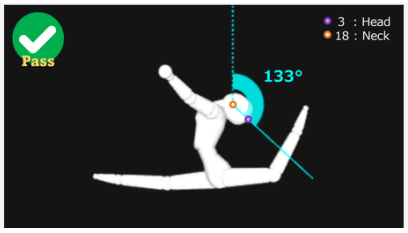


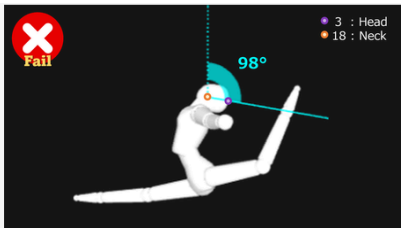




- Head Release Angle is the angle between the Neck and Head joints and must be ≥ 100° for the element to receive credit

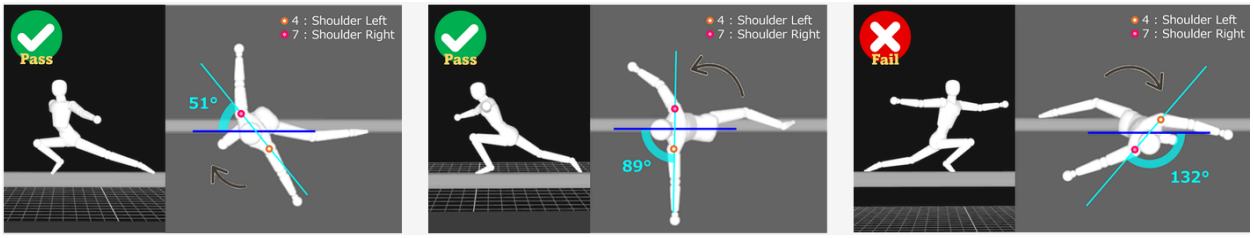






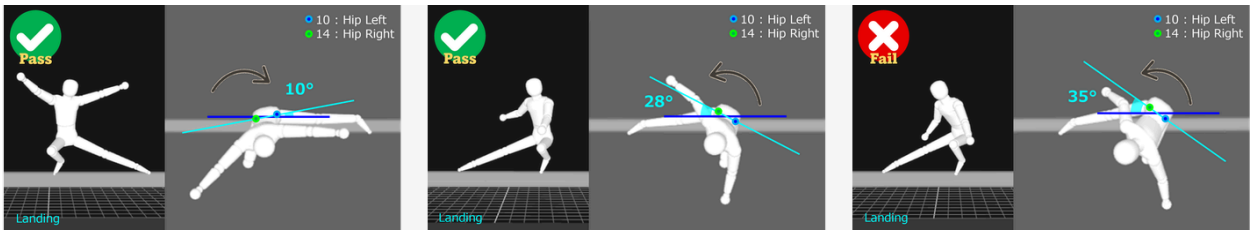
8. Turns in Tuck Stand on Balance Beam

- Almost all gymnasts use the shoulders to initiate the rotation of the turn before the free / non-turning foot leaves the balance beam. Therefore, the criteria required to receive credit is based on shoulder angle to the balance beam when the free / non-turning foot leaves the balance beam. The allowed tolerance of the shoulder angle is ≤ 120°.



- The turn is considered to be finished when the free / non-turning foot touches the balance beam. Judges should use the hips as the criteria for determining if the rotations were fully completed. In particular, the gymnast should have open hips, forming a hip angle that is parallel to the balance beam. The allowed tolerance of the hip angle is ≤ 30°.

- A visual cue to evaluate hip angle is to watch the free / non-turning foot as the gymnast completes the turn. If the gymnast slides the foot along the beam as she completes the turn, her hips are not completely open.



JSS Questions and Answers

1. Does a gymnast's body shape affect the accuracy of JSS?

- Historically 3-D cameras were used to measure each gymnast individually to adapt the system to their respective body shapes.

- The use of 3-D cameras has been deemed to be no longer necessary. Standard cameras can correctly identify the various joint points on a gymnast's body regardless of their body shape.

- The various tolerances built into JSS exist to account for various body shapes. For example, the body shape of some gymnasts may create the illusion of hip angle. To address this, tolerance for hip angle on layout positions were built into JSS.

2. Is it possible for the cameras to make mistakes? For example, due to a coach spotting a gymnast on uneven bars, will JSS measure the coach and not the gymnast?

- For the spotting situation, the cameras remained on the gymnasts, but the presence of the coach seemed to distort what the cameras picked up. This only occurred on what Sacchi referred to as 'non-critical elements' and gave kips as an example of them. Fujitsu has resolved this issue since the 2025 World Championships.

- Past iterations of JSS struggled to correctly capture both gymnasts with dark skin complexion(Sacchi used Biles as an example) or gymnasts wearing dark colored leotards when the background was also very dark. However, Fujitsu has successfully resolved this issue.

3. Will JSS be used at the 2026 World Championships?

- Yes, both the apparatus supervisors and D panel on vault, uneven bars, and balance beam will have a computer with access to JSS.

- After 10 seconds upon completion of a routine, the evaluation from JSS is available. Elements that the judges had doubts on can be seen. Once any issues have been resolved, the D Score is released.

4. If a gymnast attempts a Double Pike, but has a knee bend of 135° in one leg and ≤ 135° in the other, will the element be credited as a Double Pike or a Double Tuck?.

- The gymnast will be credited with a Double Pike. Both legs must have knee bend of ≤ 135° to be credited as a Double Tuck.

5. On Uneven Bars, can JSS support decisions regarding the 'Momentary Hang' principle in falls on flight elements?

- Yes, JSS has matched the evaluation of judges on this principle. The WTC will continue to monitor and have Fujitsu adjust JSS accordingly.

6. On Uneven Bars, can JSS recognize the different grips?

- Yes, JSS has been able to successfully identify grips and provide the correct symbols and values of elements.