

# ***The High Jump***

***Terry VanLaningham***

***Sacramento State***

***USTFCCCA National***

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# Thank You!

- Boo for his friendship, mentorship and asking me to speak.
- Cliff Rovelto for his friendship, mentorship and consultation.
- Diane Wholey for her friendship and support by sharing with me a plethora of research material!
- Alex Lohman for his technical assistance
- Kathleen Raske for her support, trust and belief in me each and every day!

# ***TALENT IDENTIFICATION***

- 1. Body Type (Tall / Long Levers / Mesomorph)**
- 2. Speed**
- 3. Powerful**
- 4. Body Awareness / Motor Control**
- 5. Suppleness / Flexibility**
- 6. Skill/Someone that can jump high!**

# **WHAT TO LOOK FOR** **(MENTAL)!**

- 1. Self-Confidence / Efficacy**
- 2. Positive (Glass is Half full)**
- 3. Focused (Not easily distracted)**
- 4. Goal Oriented (Cares about the end result)**
- 5. Emotionally Controlled (Stable)**

# **WHAT is the Objective?**

- 1. Make the Bar?**
- 2. Jump High?**
- 3. Jump-High then make the bar!**
- 4. Same for both coach and athlete?**

# **5 BIOMOTOR ABILITIES**

- **The 5 S's**
  - ▮ **Speed**
  - ▮ **Strength**
  - ▮ **Skill**
  - ▮ **Stamina**
  - ▮ **Suppleness**



# **PSYCHOLOGICAL CONTROL**

- **Arousal**
  - ▮ The level of mental and physical ups and downs.
- **Emotional**
  - ▮ Time specific state of mood.
- **Attention**
  - ▮ Ability to narrow focus.



# **DEVELOPEMENT**

- 1. Maintain Strengths while improving weaknesses (Physical & Technical)**
- 2. Increase core strength for postural integrity**
- 3. Increase all lower body joints ability to accept ground contact forces**
- 4. 80% / 100% - Do not Over train!!**
- 5. DMR = Daily Maintenance Routine**



# **Teaching Progression**

- **Approach**
- **Take-off preparation / Plant**
- **Take -off**
- **Flight/Clearance**

# **Approach – 8/10 strides**

## **1. Drive phase (first 2-4 strides)**

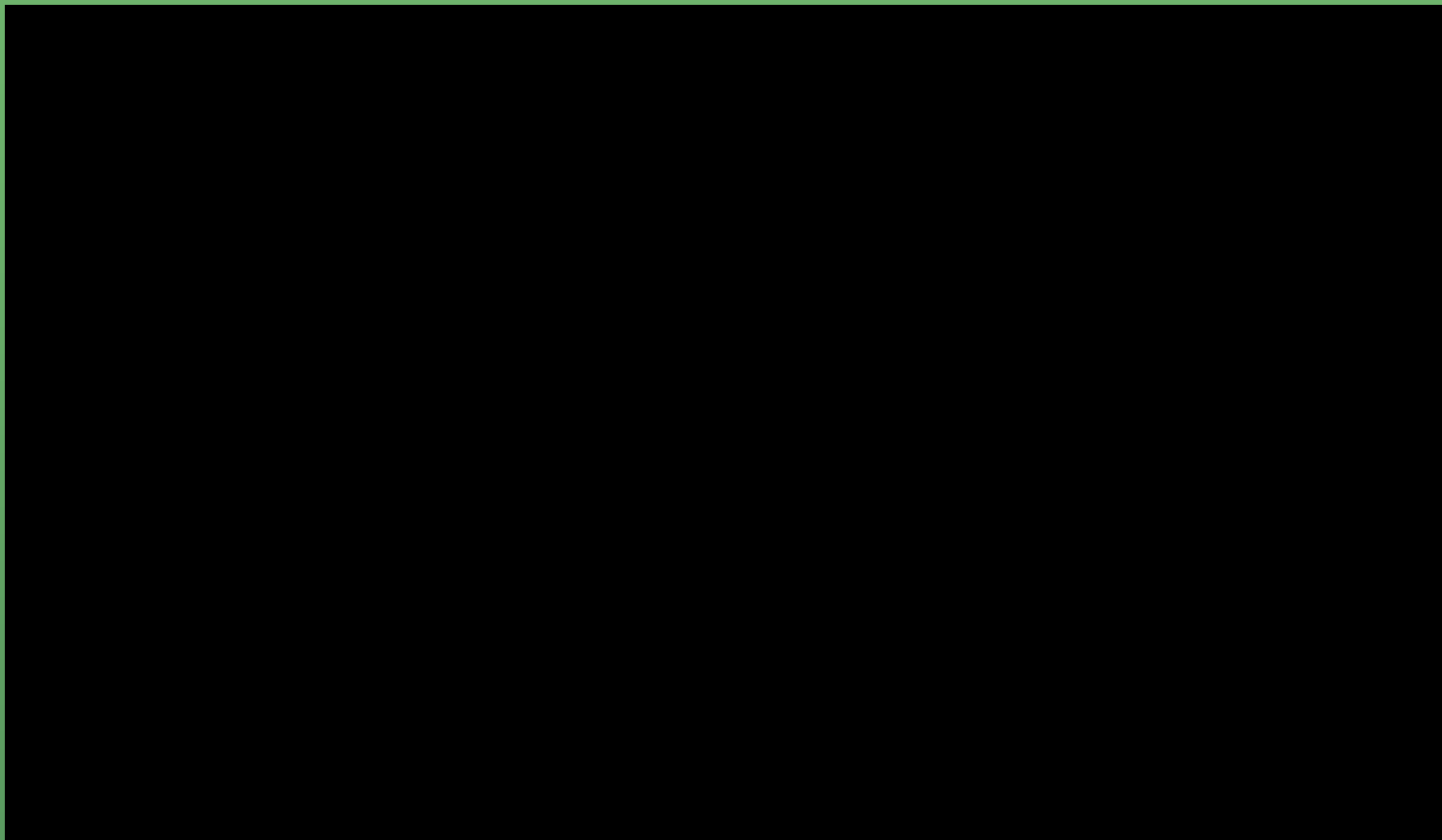
- a. Low Frequency / 45 shin angle / vertical at 2<sup>nd</sup> or 4<sup>th</sup> stride
- b. Visual cue check mark

## **2. Continuation phase (3-5 or 5-7strides)**

- a. Vertical on 3/5<sup>th</sup> stride (shin angle)
- b. Initiate curve on 4<sup>th</sup> or 6<sup>th</sup> / Outside pressure / Visual cue inside standard or center of bar
- c. Increase horizontal velocity / At least maintain it

## **3. Transition phase (final 3 strides)**

- a. Inline body lean / shoulder axis remain perpendicular with curve / flat foot touchdown on curve parallel to curve / Visual cue top of opposite standard
- b. Lowest C of M
- c. Maintain horizontal velocity
- d. Preparing for takeoff



# **Common Errors of Drive Phase**

- 1. Incomplete extension of push leg / hinged joints**
- 2. Shin angle too small. Not enough displacement**
- 3. Stride frequency too fast / Stride Length too short**
- 4. Not upright prior to entering the curve**
- 5. Poor running mechanics**
- 6. Speed does not build enough due to all the factors above**

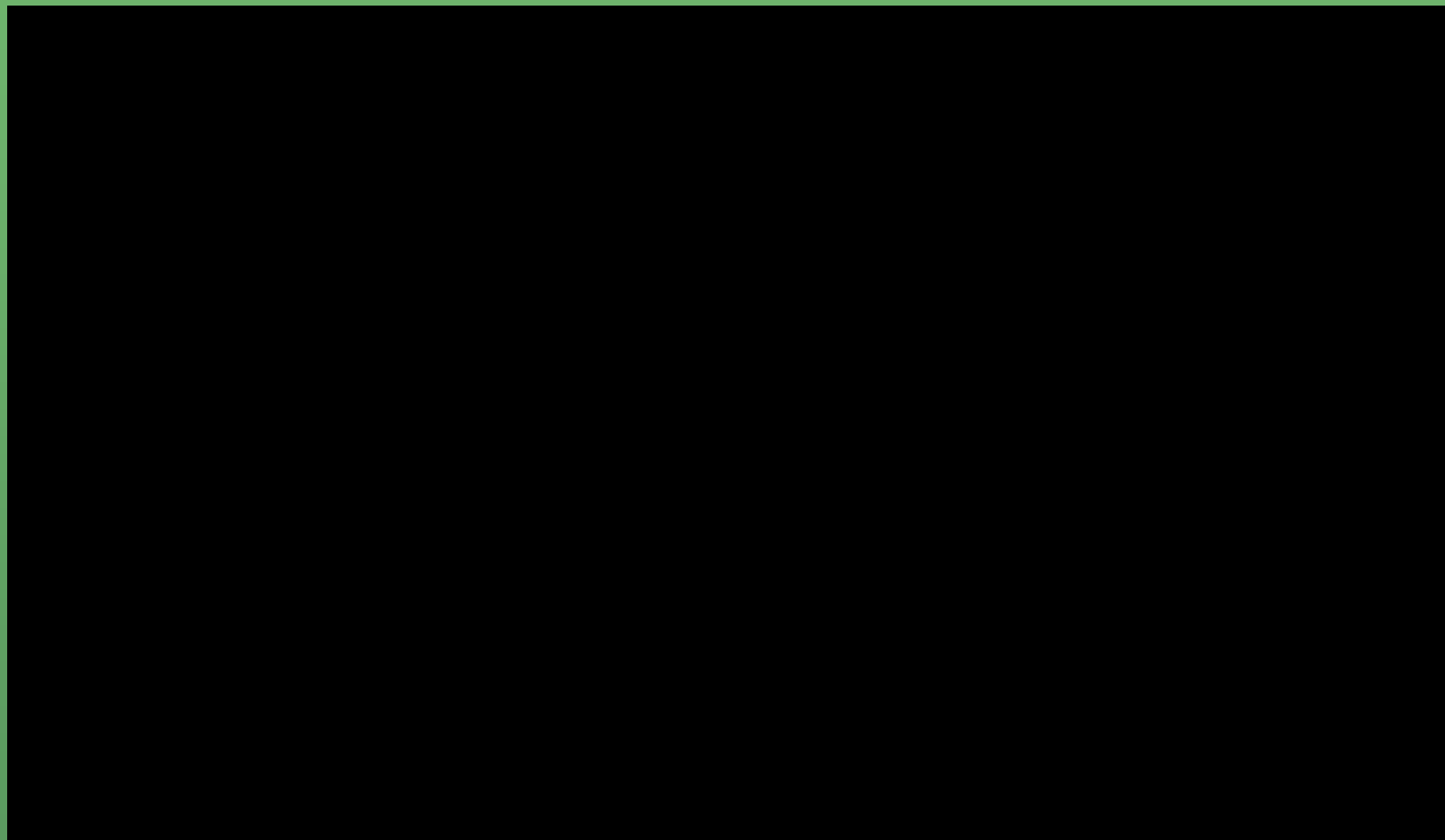
# **Common Errors of Continuation Phase**

- 1. Any errors with the Drive Phase**
- 2. Initiation of curve is with shoulder turn and lean at trunk only**
- 3. Foot placement is not parallel to curve path and on path**
- 4. Heel spins out**
- 5. Poor posture – leaning forward**
- 6. Speed is reduced due to all the factors above**

# ***Take-off Preparation***

1. **Third to last step must be full and not compromised – Maintains horizontal velocity**
2. **Penultimate step (Second to last step)**
  1. **Contact preparation – ankle flexion, quadriceps tension**
  2. **Must stay on the curve to maintain body lean and posture**
  3. **Heel leads back towards ground, flat foot contact**
  4. **C of M stays low or lowers more onto due to triple flexion and flat foot landing**
  5. **Great horizontal displacement of hips prior to contact of penultimate**
  6. **Hip axis slightly toward pit**







# **Take Off prep Errors**

1. **Loss of horizontal velocity – Result of all the below**
2. **Third to last stride touchdown is turned too much to the inside and causes the heel to spin out and or the shoulder axis to rotate away from the bar**
  1. This causes a loss of horizontal velocity and proper body axis lean away from the bar
3. **Foot placement of penultimate is outside of curve (stepping out) and or too far forward of C of M**
  1. This results in misdirection of the plant stride and negatively affects subsequent angular or rotary momentum
  2. Causes too long of a last step and large negative vertical velocity
4. **Reduction of lean away from bar / Usually due to #1 & 2**
5. **Loss of posture / Usually too forward and butt out**
  1. Usually from lack of core strength and lower limb load acceptance capacities

# ***Plant***

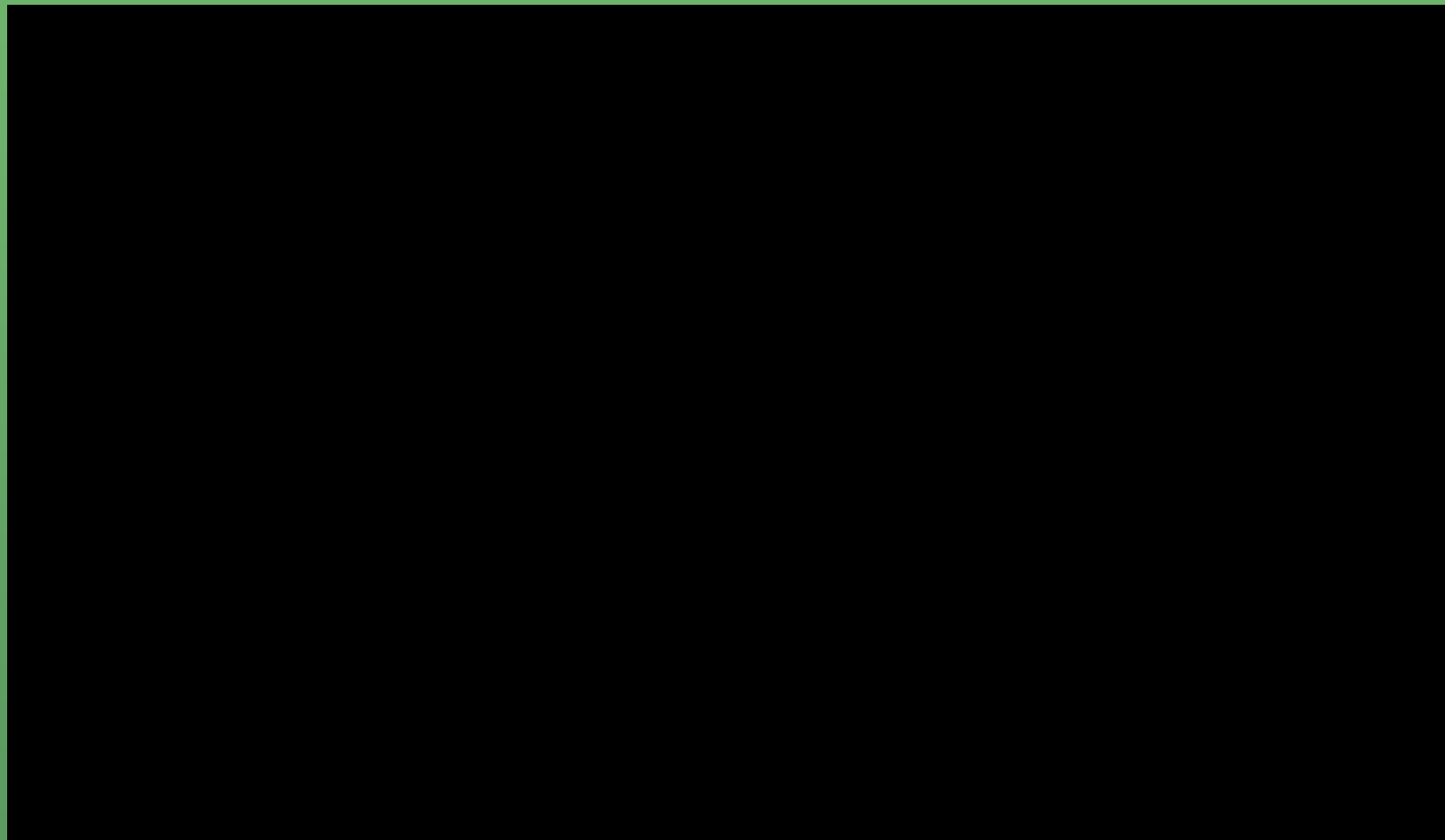
**Second to last step must be full and not compromised –  
Pre-loads plant / take off and Maintains horizontal velocity**

- 1. Low heel recovery to aid in foot placement and support stabilization**
- 2. Lead with thigh – pull thru quickly after toe off**
- 3. Flat foot landing (in front of hips C of M)**
- 4. Foot placement just short of parallel to bar**
- 5. Shoulders and Hips on same axis / inside shoulder lower**
- 6. Body lean away and back from bar**
- 7. Ideally arms are in sync with free leg thigh**



# **Plant Errors**

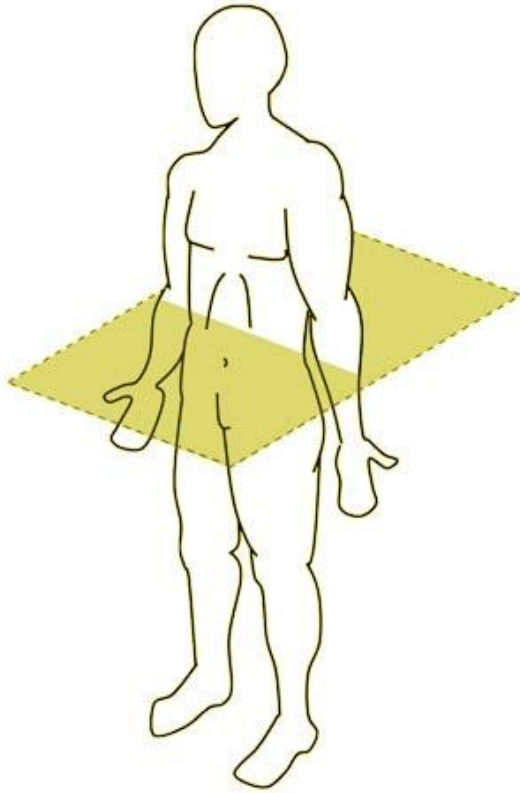
1. **Loss of horizontal velocity – Result of all the below**
2. **Second to last stride touchdown is too far forward**
  1. This causes the hips to be too far behind and thus the thigh to be late coming thru
3. **Path of the plant leg is too flat or too steep relative to the bar**
  1. Due to previous strides touchdown placement off of the curve path
  2. This causes changes in body lean and resulting angular momentum rotations
4. **Reduction of lean away from bar / Usually due to #3**
5. **Plant foot parallel to the bar or turned slightly away**
  5. Due to excessive foot turn during curve or stepping outside of curve on penultimate
  5. Causes – Loss of vertical velocity, Lateral rotation into the bar and excessive torque on the ankle and lower leg



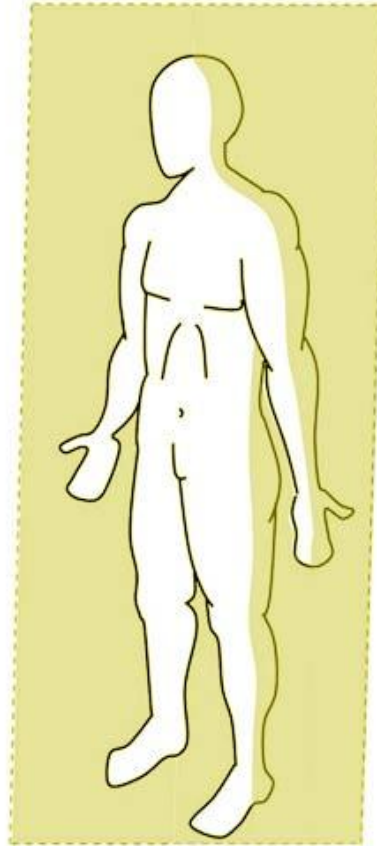
# Take Off

1. Complete, uninterrupted firing of joints while on the ground
2. Conservation of postural alignment during free leg swing (thigh)
3. Free leg swing block complete to 90 degrees and held in the direction of the curve – away from the bar
4. Arm movement displays some extension and large range of motion upward in the line of the curve and blocks at the shoulders
5. Rotation in all three planes due to hinged movement activity after release
  1. Forward rotation (frontal plane) small amount
  2. Lateral rotation (sagittal plane) large amount created by lateral hinging that occurs during support phase of take-off
  3. Turning (transverse phase) occurs at the same time of the release (push off) from the ground, so that rising and turning occur simultaneously and at the same rate
    - a. **Holding the free leg momentarily will result in the axis rotation from the ground**

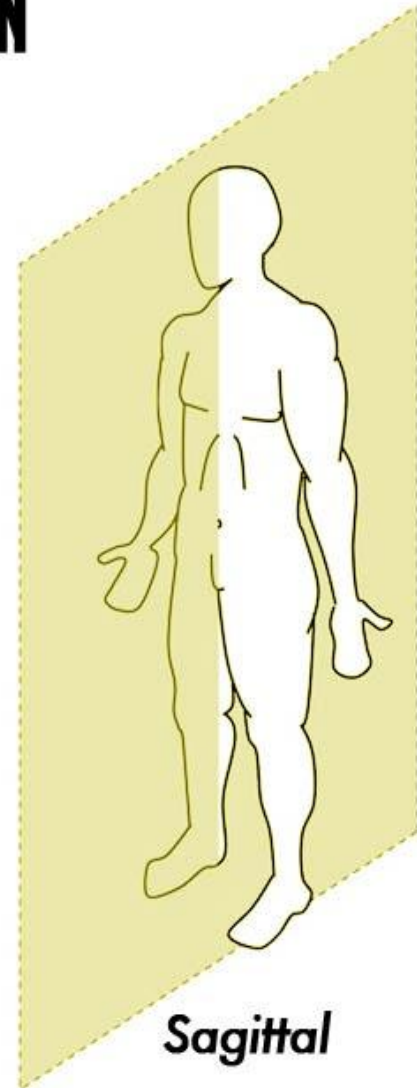
# THREE PLANES OF MOTION



**Transverse**



**Frontal**

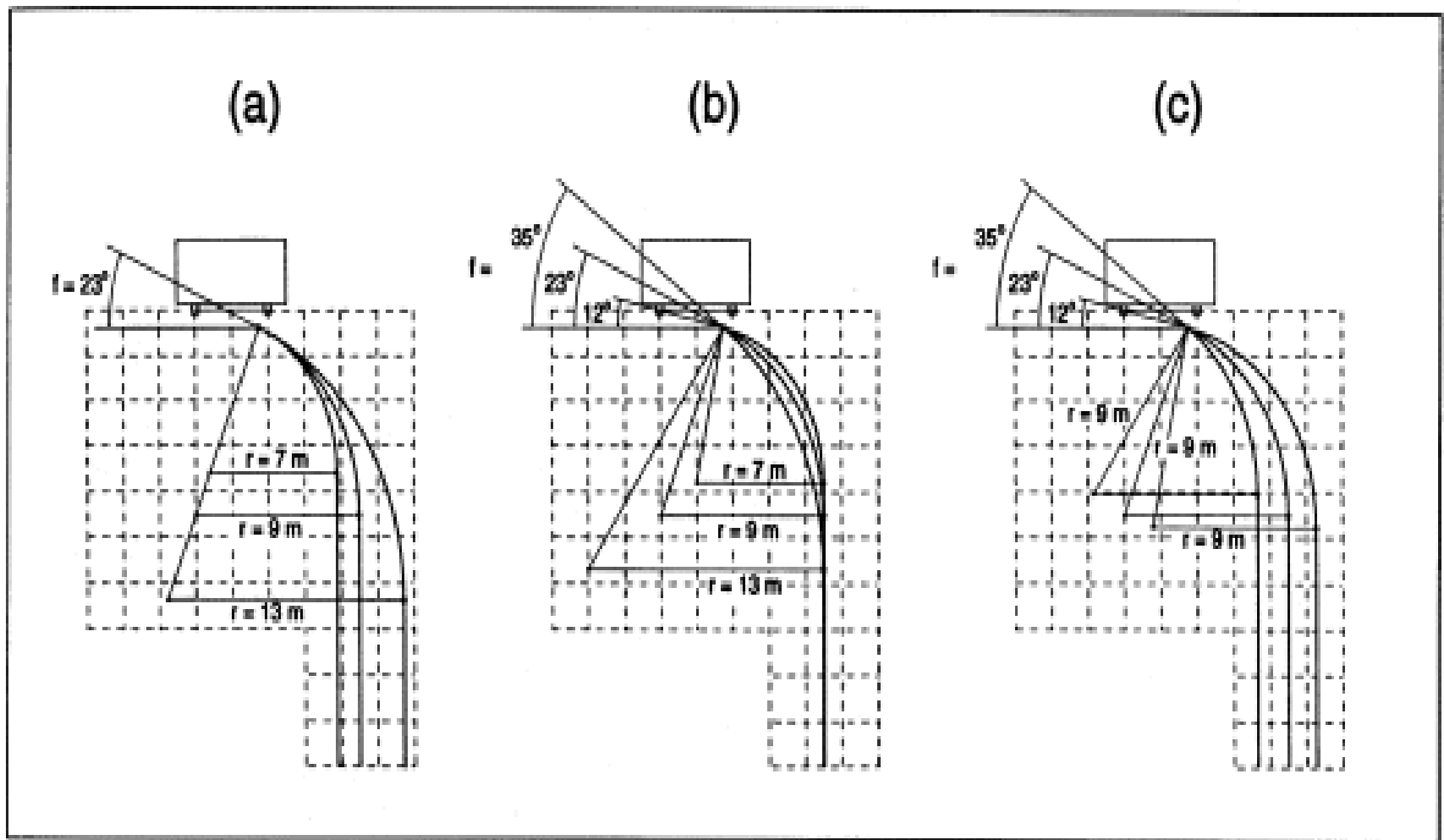


**Sagittal**





# Approach and Flight Path





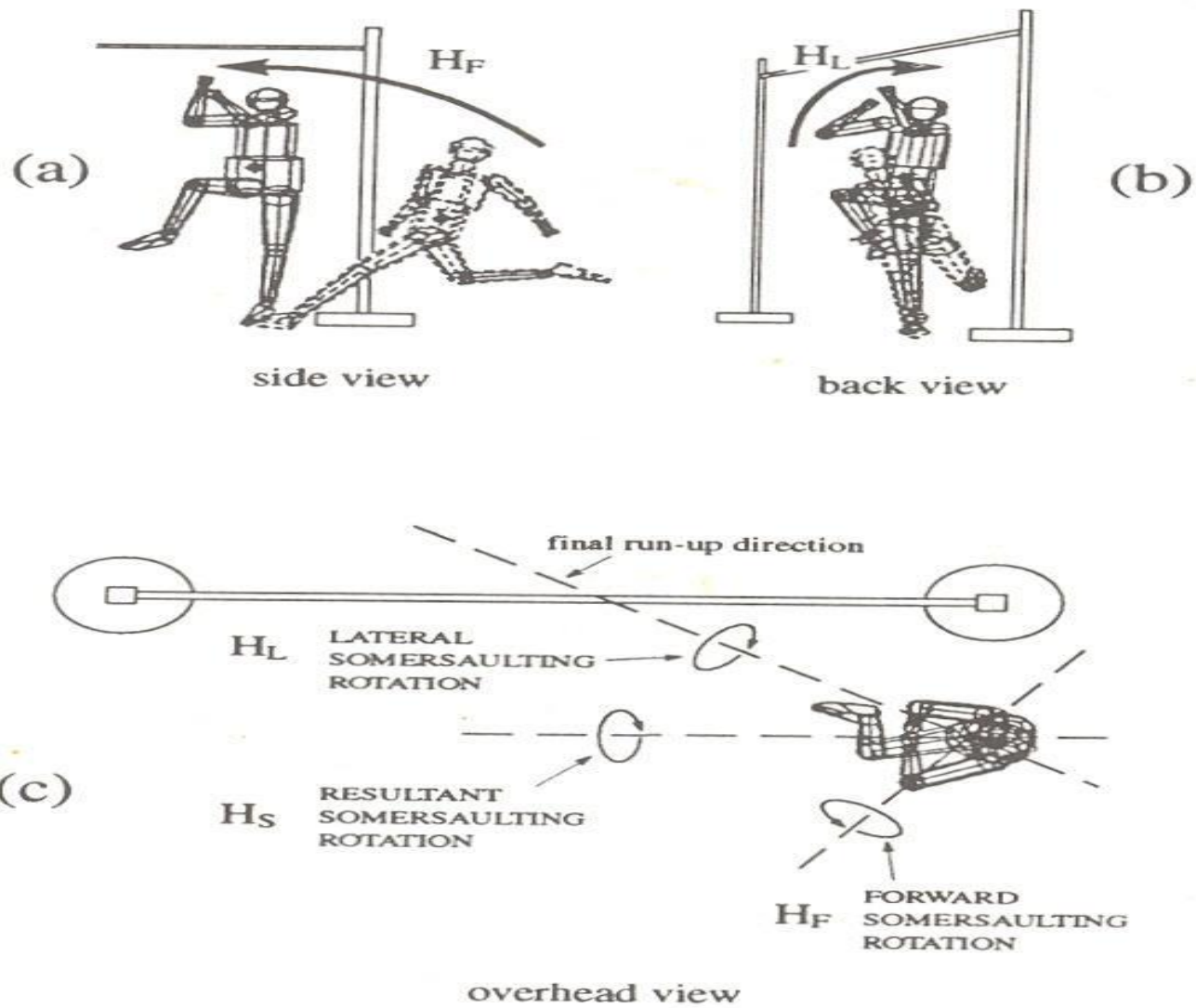
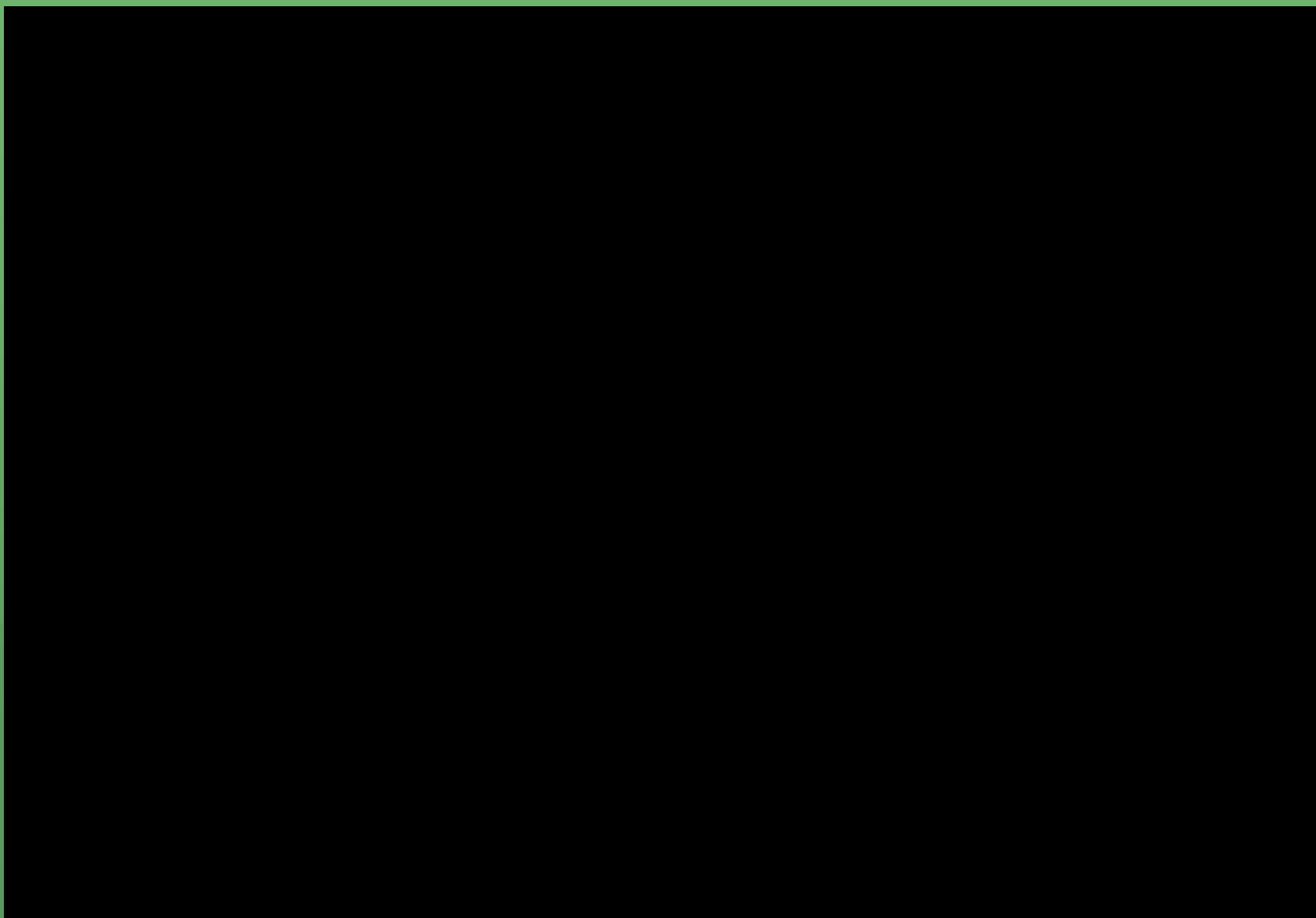


Figure 1



# **Flight / Clearance**

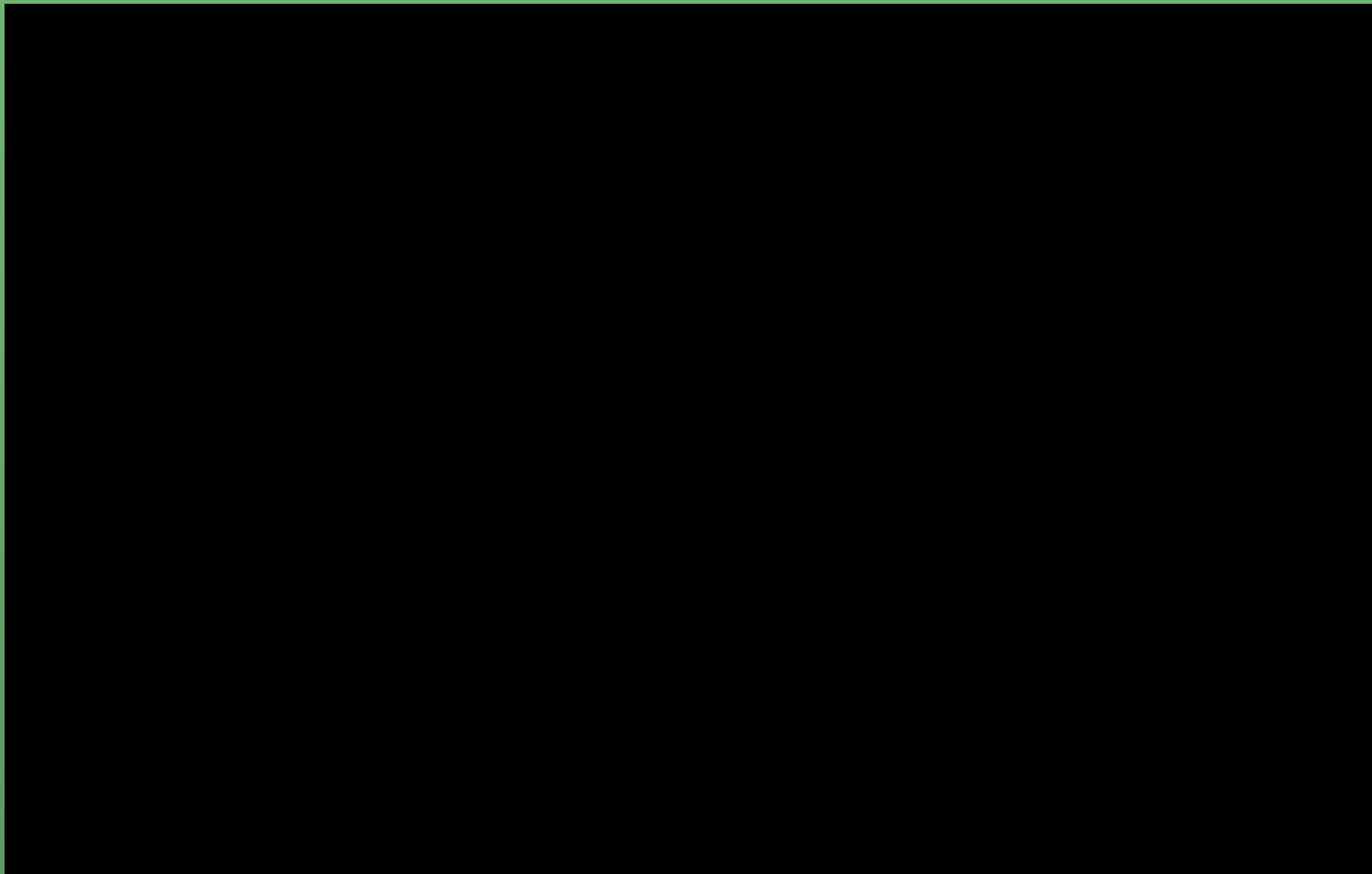
- 1. Slight hyperextension of hips (lay back) or arch back**
- 2. Relaxation of iliofemoral joint (Femur externally rotates, knees flare out) – Holds lay back position, also helps keep heels from hooking under**
- 3. Arms return to side, with hands next to or above hips**
- 4. Knees are flexed**

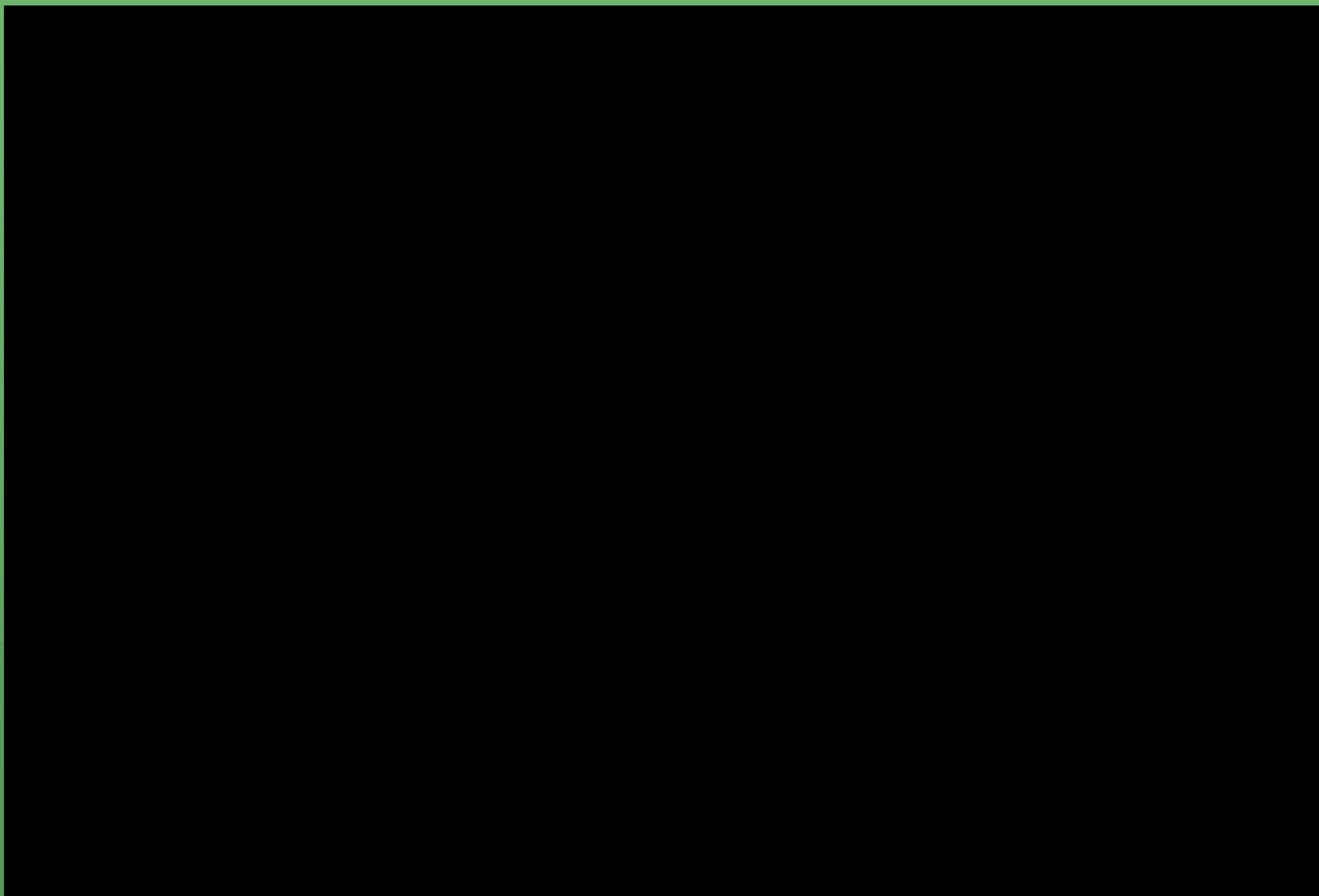
## **Flight / Clearance - Continued**

5. **Head and neck should be near cross bar early in flight**
6. **The hips rotate over and above the head as they cross the bar**
7. **Once the knees are above the bar the head should be lifted towards the chest to facilitate lifting the feet over the crossbar (ends and middle / middle and ends)**
8. **Land high on shoulders**

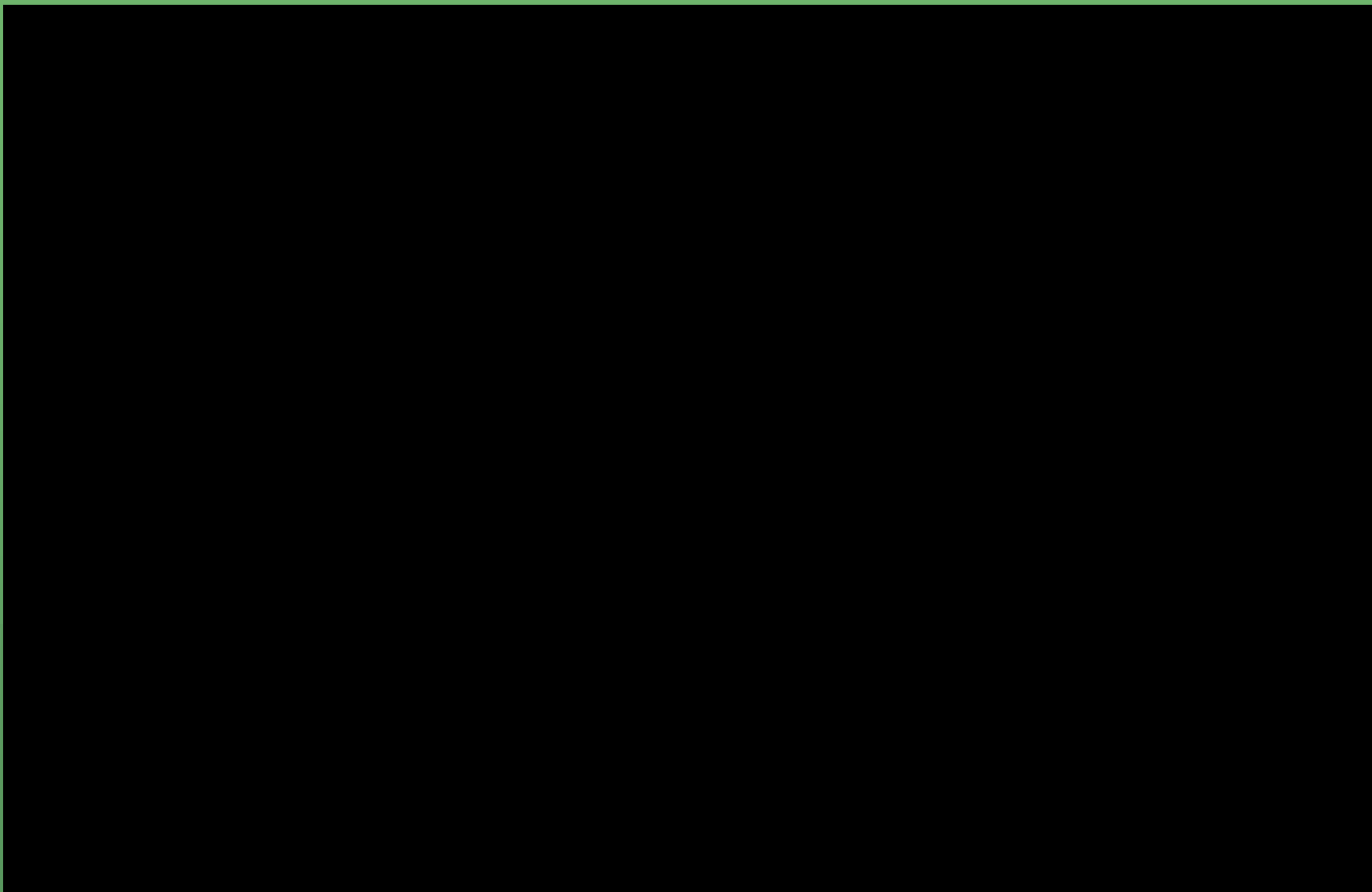


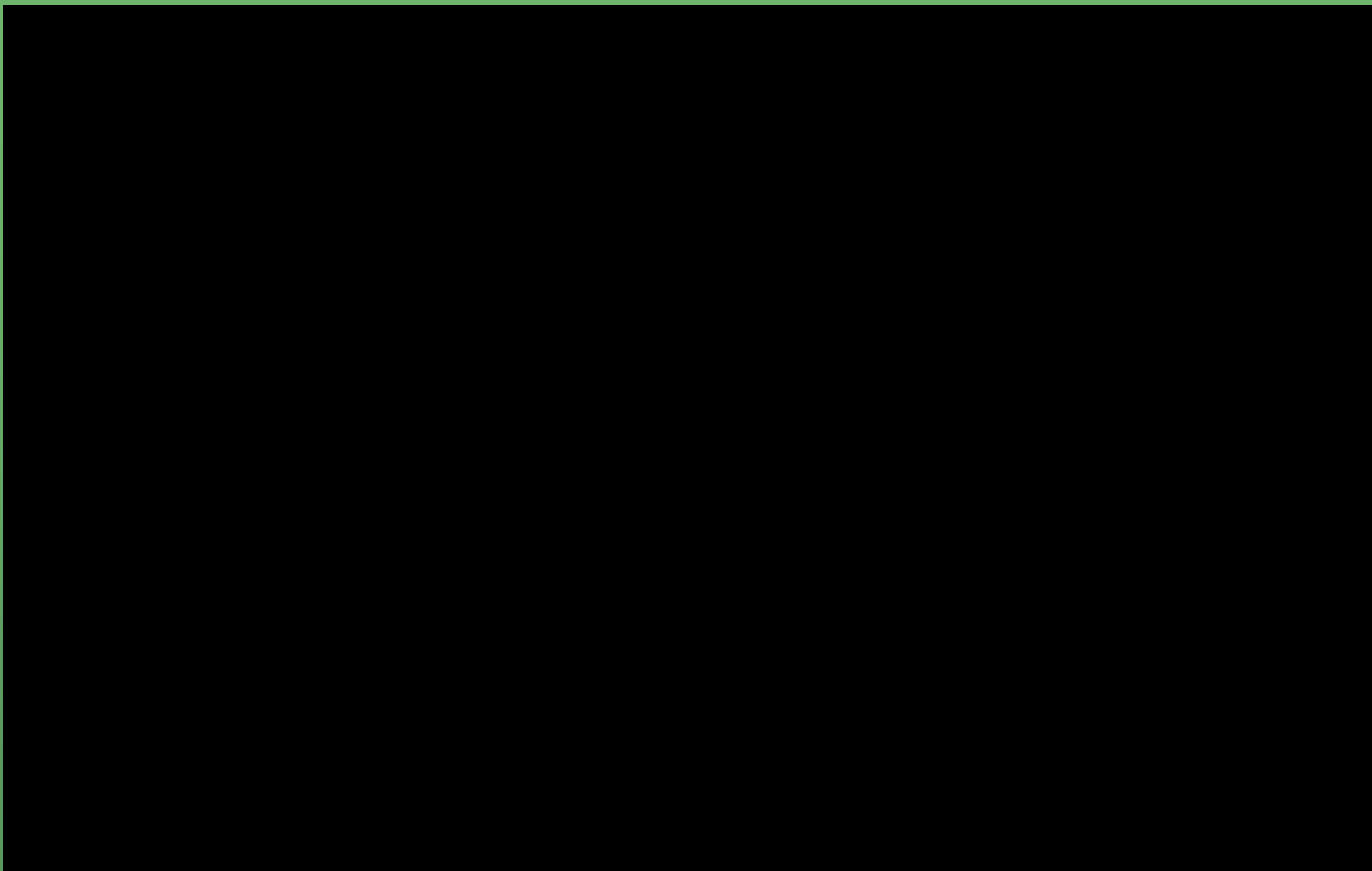
Symptom	Probable Underlying Cause
Jumping leg "collapses"	<ol style="list-style-type: none"> <li>1. Final step is too long (power jumper)</li> <li>2. Leg weakness</li> <li>3. Excessive speed into the jump</li> </ol>
Slowing down into the jump	<ol style="list-style-type: none"> <li>1. The approach start is too fast</li> <li>2. Lack of confidence</li> <li>3. Turning with too tight a radius</li> <li>4. Not leaning into the turn</li> </ol>
Knocking off the bar on the way up	<ol style="list-style-type: none"> <li>1. Takeoff is too close to the bar</li> <li>2. Jumping at the bar, not straight up</li> <li>3. Not arching soon enough</li> </ol>
Knocking the bar off in the middle of the jump	<ol style="list-style-type: none"> <li>1. Not arching enough</li> <li>2. Taking off too far away</li> </ol>
Knocking off the bar on the way down	<ol style="list-style-type: none"> <li>1. Not kicking out soon enough</li> <li>2. Not enough approach velocity (comes down on bar)</li> <li>3. Taking off too far away</li> </ol>
Not arching enough	<ol style="list-style-type: none"> <li>1. Weakness of the gluteal and lower back muscles</li> <li>2. Not dropping head (looking over the shoulder)</li> </ol>
Not leaning into the turn	<ol style="list-style-type: none"> <li>1. Not running fast enough</li> <li>2. Too wide an approach turn</li> <li>3. Unstable/uncoordinated</li> <li>4. Starts turn with non-jumping foot (post pattern)</li> </ol>







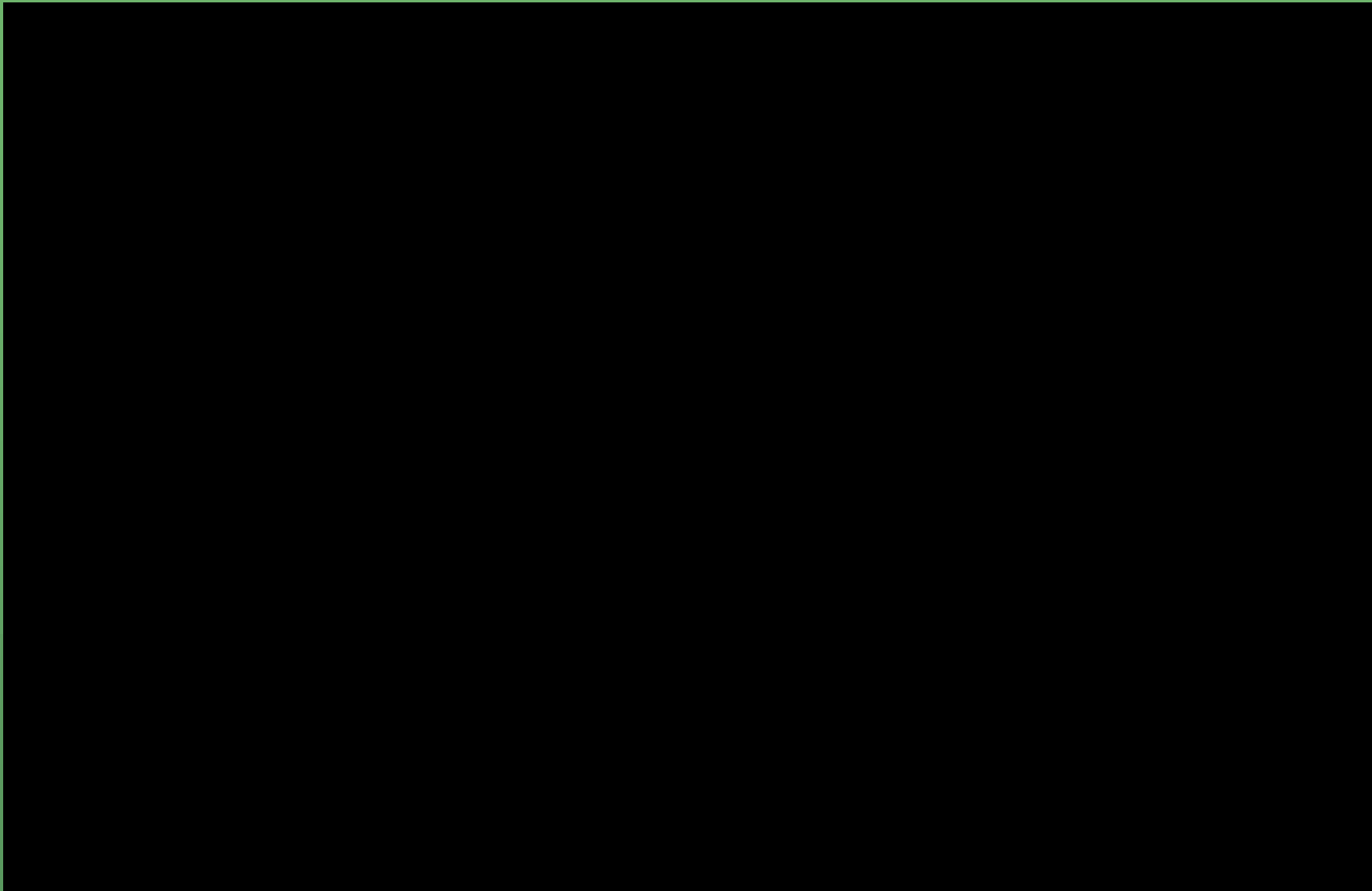




# **FINAL THOUGHTS**

- **Train the person first / athlete second.**
- **Teach then Coach.**
- **Be flexible.**
- **80 / 100.**





**MERRY  
CHRISTMAS!**

**&**

**Happy New Year!**

# ***QUESTIONS***



**Terry VanLaningham**

**Sacramento State**

**tlvanlan@csus.edu**

**916-278-6208**





