

# Throwing Diagnostics

Cincinnati Ultimate Select Program

## Intro

Learning to throw a disc can be an arduous task. Many ultimate players learned to throw on their own without a lot of guidance from an experienced thrower, which in many cases led to a great deal of frustration. Self taught throwers often develop poor throwing mechanics that involve introducing extraneous planes of motion into the throw, adding extra variables when the thrower must control in order to develop consistent throws.

When teaching new throwers, a coach can play a crucial role in helping correct errant throws. The coach can easily view the body mechanics of the thrower and draw upon his/her own experience to correct the throwing motion and greatly reduce the amount of time required to reach throwing proficiency. When diagnosing throwing mechanics, watching the path of a thrown disc can reveal a lot about the mechanics of the thrower. The following guide provides clues as to what a thrower is doing wrong based on the flight of the disc after it is thrown. Pictures and descriptions are included of both the incorrect and correct method of throwing.

For this exercise, it is useful to define a few terms to avoid confusion.

Leading Edge	The edge of the disc that is farthest forward in the direction of flight
Trailing Edge	The edge of the disc that is farthest away from the direction of flight (opposite the leading edge).
Outside Edge	The edge of the disc that is farthest away from the body of the thrower.
Toward the throwing side	Direction toward the side of the body from which the throw is released. For a right handed thrower, this would be to the left on a backhand and to the right on a forehand.
Away from throwing side	Direction away from the side of the body from which the throw is released. For a right handed thrower this would be to the right on a backhand and to the left on a forehand.



At the end of this guide, an abbreviated table has been included with key difficulties that new throwers have. It is hoped that this easily transportable guide can be easily used at practices to quickly improve the skill of new throwers.

Many ideas presented here come from the philosophy of simplifying the throwing motion so there are fewer degrees of motion that new throwers have to control. While many things are presented here, I have found that most throwing errors fall in just a couple areas.

For the backhand, the most common error is not stepping across the body to allow for proper shoulder rotation, which limit power and decreases separation from a mark. The second most common error stems from poor balance where the thrower doesn't move their weight forward onto their front foot, which also robs a throw of power. Proper balance is also the primary cause for inconsistent control of the trajectory of a disc as poor balance leads to inconsistent release points. The third most common error is to throw the disc under the off arm rather than over, which can cause the disc to curve to the throwing side. Throwers who commit this error may also be throwing with too much arm and not enough shoulder rotation. Plus, having your off arm up high creates a temptation to push off.

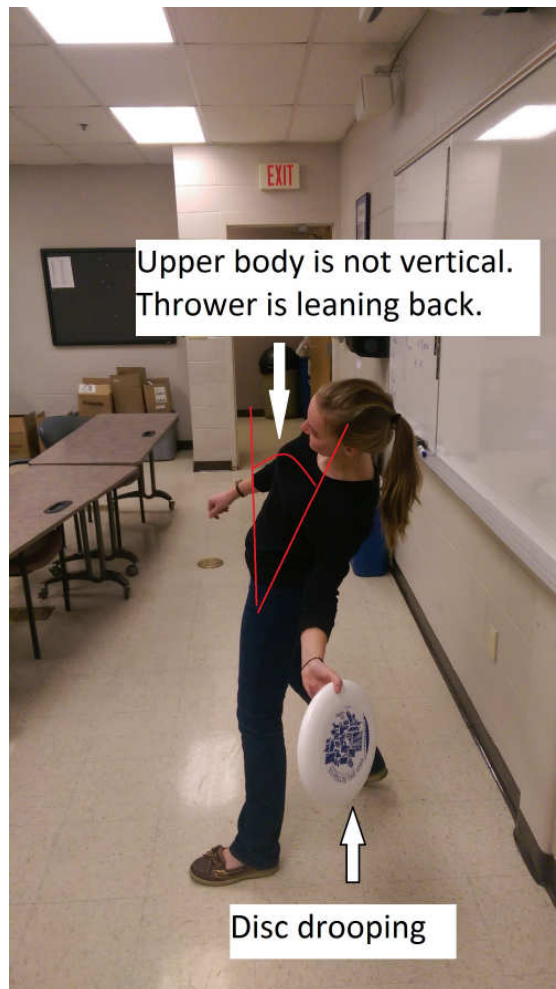
For the backhand, the single greatest issue that new throwers have is finishing with their throwing hand past the midpoint of their body. By swinging the arm across the body, they roll their wrist and cause the disc to curve away from the throwing side. The second most common error is to have too high a release point so that the top of the disc is facing away from the throwing side rather than straight up. This too causes the disc to curve away from the throwing side. The third most common error is poor balance, particularly having ones weight on the back foot rather than the front foot. By leaning back in this way, the thrower robs their throws of power and often introduces a new plane of motion that they much control.

Special thanks to Casey for being my model for this guide.

## Diagnosing the forehand

### Curves towards the throwing side

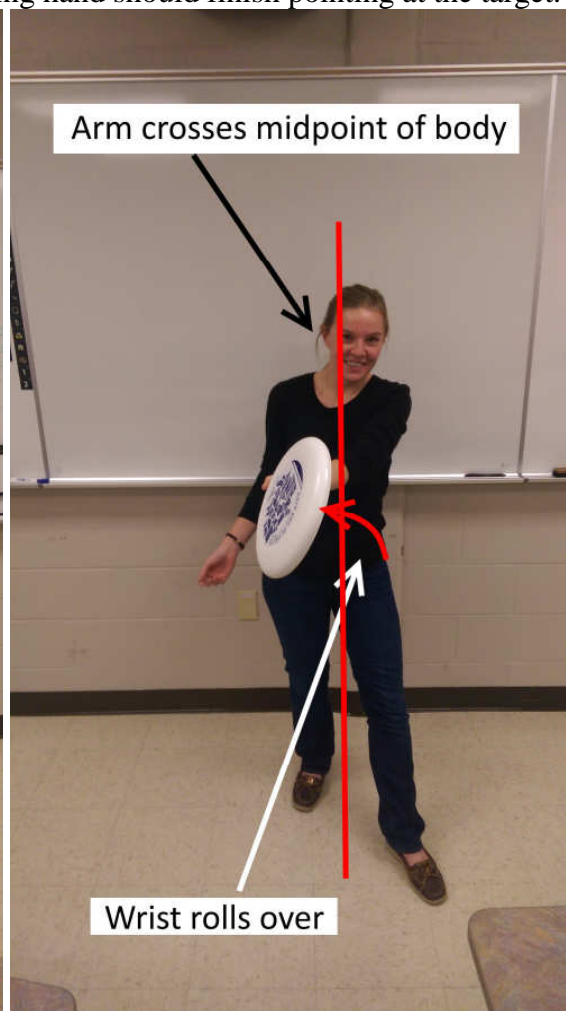
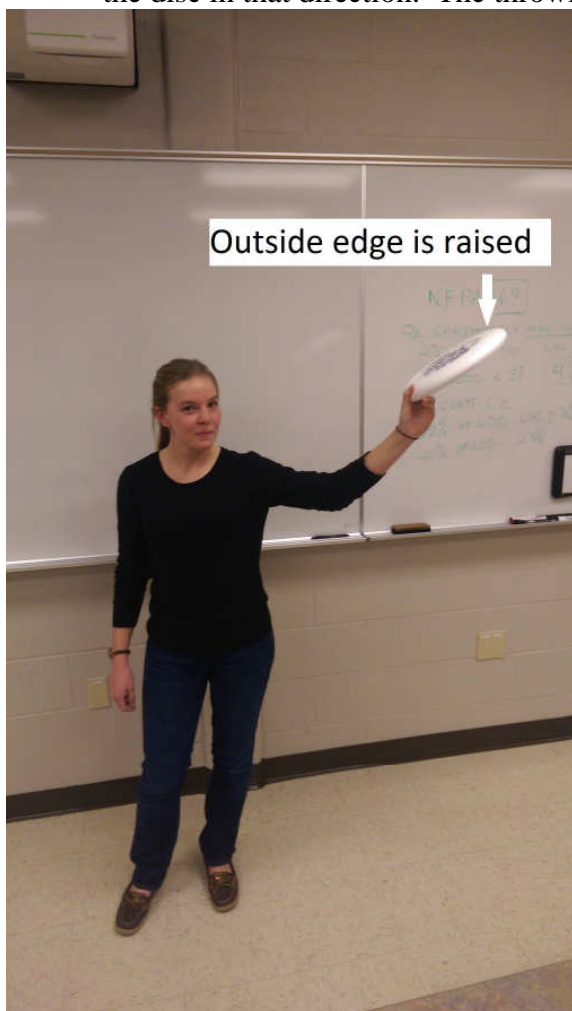
For a right handed thrower, this means that the forehand is curving to the right (or to the left for a left handed thrower). Typically this sort of flight path is caused by the outside edge being too low as discs will turn in the direction the top of the disc is facing. If done controllably, this “error” results in an inside out throw. Two factors that may be causing this flight path are too much droop in the grip or releasing the disc from too low an arm slot resulting in a downward angle of the forearm. For the former, check to make sure the thrower has their thumb on the flight rings of the disc. For the latter, have them raise their throwing hand until the outside edge is no longer pointed down.



### Curves away from the throwing side

For a right handed thrower, this means that the forehand is curving to the left (or to the right for a left handed thrower). Typically this sort of flight path is caused by the outside edge being too high (disc is angled up away from the hand), which could be the result of a number of things.

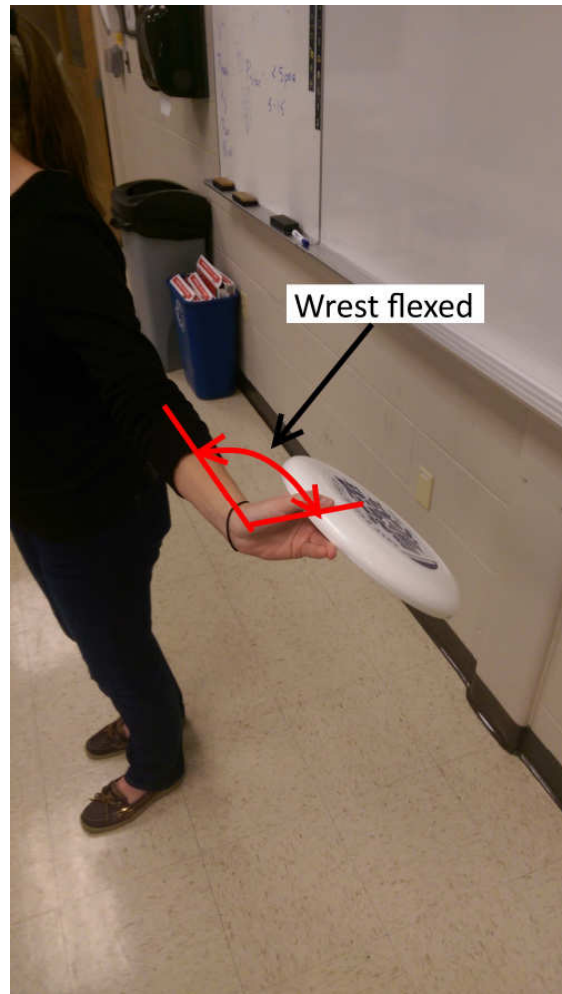
- Check the grip to make sure that the outside edge isn't angled up because of improper thumb placement. This error is uncommon, but should still be checked.
- Check that the thrower is not using a split fingered grip. It is easier to droop the outside edge of a disc if the thrower is not using a split fingered grip.
- Check to make sure that the release point is NOT up around the shoulder. While this sort of high release can (and often is) used, proper technique requires that there be significant "droop" to the outside edge. New throwers should not be attempting such an advanced throw. Throwing from up around the shoulder will result in an upward plane of the forearm, pointing the top of the disc to the left (for a righty) and causing the disc to curve in that direction. The easiest way to fix this is to move the release point closer to the throwers waist.
- Check that the throwing hand does not cross over the midpoint of the body as doing so will usually cause the wrist to rotate, pointing the top of the disc to the left and curving the disc in that direction. The throwing hand should finish pointing at the target.



### Throw wobbles

Wobbling throws are caused by a slow rate of rotation of the disc. The faster a disc rotates, the more stable its flight and the flatter the throw will be.

- Encourage the thrower to “snap” their wrist harder to increase the spin on the disc.
- Check to make sure that the disc is “cocked” back during the backswing while preparing to release. After the arm is moved back and just before the forward throwing motion, the disc should not extend straight out from the forearm (a straight line should not pass through the elbow, wrist and outside edge of the disc). Instead, the outside edge should be behind the wrist.
- Make sure the fingers under the disc are mostly, but not completely extended and that the pads of the fingertips are on the rim of the disc.





## Turfs the disc

Everyone will turf a disc occasionally, but occasionally new throwers will have a lot of trouble maintaining the proper height on their throws. Errors in the trajectory of a disc usually arise from one of two areas. Either the arm/disc is not moving forward on a level path at release or the throwers balance is off. Either of these two errors will introduce another plane of movement into the throwing motion and, therefore, add another layer of complexity, which leads to inconsistency.

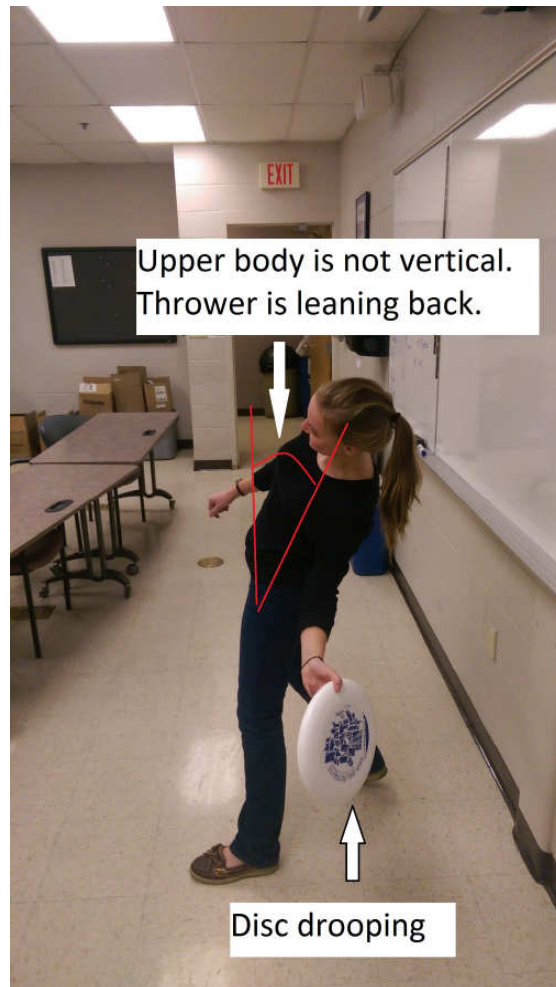
- Check that the thrower is not cocking the trailing edge of the disc up before their forward throwing motion. The disc should be flat or even slightly inverted (outside edge down) through the throwing motion.
- Check the arm is moving forward in a flat motion parallel to the ground and not swooping down and then back up.
- Check that the thrower is properly balanced at the moment of release with the weight moving forward and centered over the front foot.
- Check that the torso is upright and not severely bent forward at the waist.



### Throws are too high

As with turving the disc, high throws will happen occasionally. Here we are interested in a thrower who consistently throws the disc too high or struggles controlling the level of the disc. Throwing the disc too high can be the result of the same sorts of errors that cause a thrower to turf a disc.

- Check that the thrower is not cocking the trailing edge of the disc up before their forward throwing motion. The disc should be flat or even slightly inverted (outside edge down) through the throwing motion.
- Check the arm is moving forward in a flat motion parallel to the ground and not swooping down and then back up.
- Check that the thrower is properly balanced at the moment of release with the weight moving forward and centered over the front foot.
- Check that the throwers palm is facing up after the release by that they don't have their fingers pointed up. We are not "flipping the bird" and such a motion will tend to push the disc up.

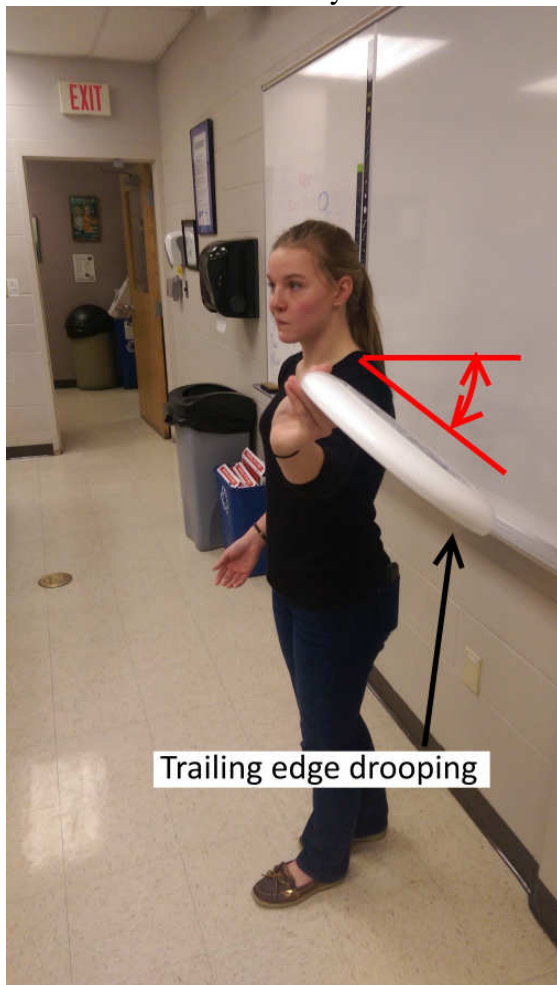




### No throwing power

Several things can affect the power on a throw. Clearly if the disc is wobbling during flight it will be robbed of power (see wobbly throw above). In general, more spin and a harder snap of the wrist (necessitating quicker forward arm movement) is necessary for more power. Power can also be robbed from a throw if the angle of attack doesn't match the trajectory of the throw causing the disc to move forward with too much of the underside exposed. In this case, the thrower is effectively trying to throw a sail forward and it will be very hard to achieve good power.

- Check that at the moment of release, the trailing edge of the disc is only slightly lower than that leading edge
- Watch the disc after it is release to see if the angle at which the disc flies is very close to the angle the disc makes with the ground
- Encourage the thrower to snap their wrist forward more quickly.
- Make sure the thrower leads with their shoulder and keeps their elbow in front of their wrist until the very end of the throwing motion.



### Throw is straight and flat but off target

Two common errors cause this sort of flight path for the disc. The first is poor timing on the release. If the release is too early the disc will fly off toward the throwing disc. If the release is too late, the disc will fly toward the non-throwing side. The second cause is improper wrist snap where the wrist snaps to the non-throwing side rather than snapping up. Proper throwing form should involve a rotation of the entire forearm and not just the wrist.

- Check the throwers fingers after the release and make sure they are pointed at the target.
- Make sure the throwers entire throwing arm is pointing at the target after release.
- When throwing long distances, tell the thrower NOT to throw as hard as they can. When throwing at maximum effort, the thrower will usually tighten their grip on the disc, which may throw off their timing.

## Diagnosing the backhand

### Curves towards the throwing side

For a right handed thrower, this means that the backhand is curving to the left (or to the right for a left handed thrower). Typically this sort of flight path is caused by the outside edge being too low as discs will turn in the direction the top of the disc is facing. If done controllably, this “error” results in an inside out throw, but this is a more advanced throw that should only be attempted once normal flat throws are mastered.

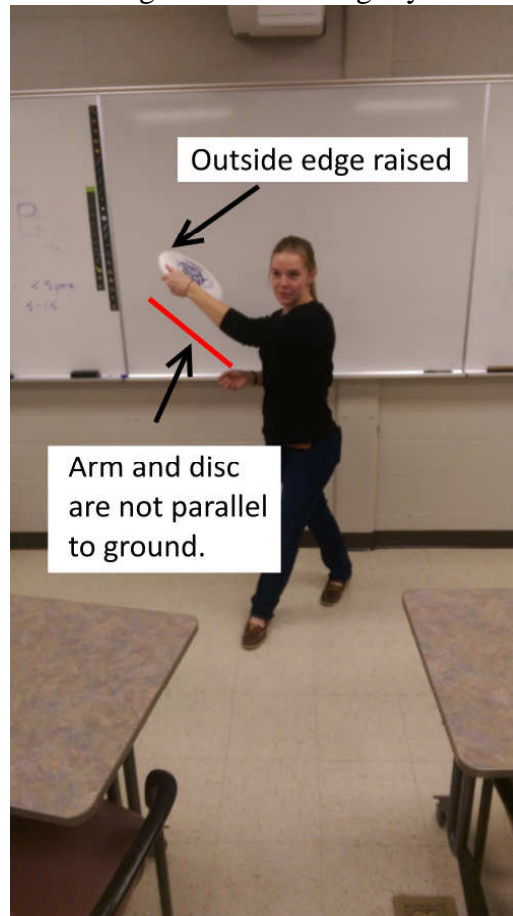
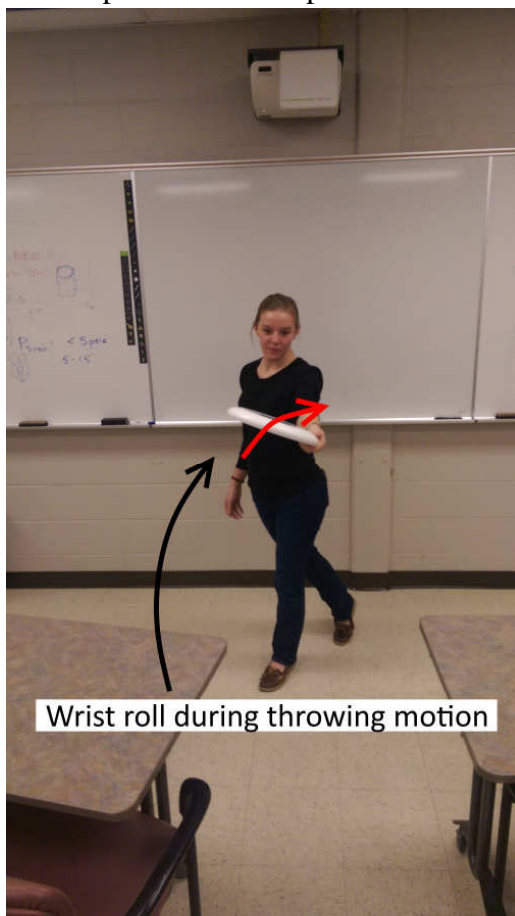
- Check that the thrower has the disc over their non-throwing arm on the backswing and not under it. Subconsciously, in this situation the thrower may drop the outside edge to avoid hitting their elbow, which will cause the disc to curve to the left (for a righty).
- Check that the thrower keeps their forearm flat and level through the throwing motion. The forearm should not swoop down and then back up, which will lower the outside edge of the disc and cause it to curve.
- Check that the thrower is stepping across their body when they throw and not just straight forward. Throwers who make this mistake will commonly have a swooping throwing motion in an effort to generate more power.



### Curves away from the throwing side

For a right handed thrower, this means that the backhand is curving to the right (or to the left for a left handed thrower). Typically this sort of flight path is caused by the outside edge being too high (disc is angled up away from the hand), which could be the result of a number of things.

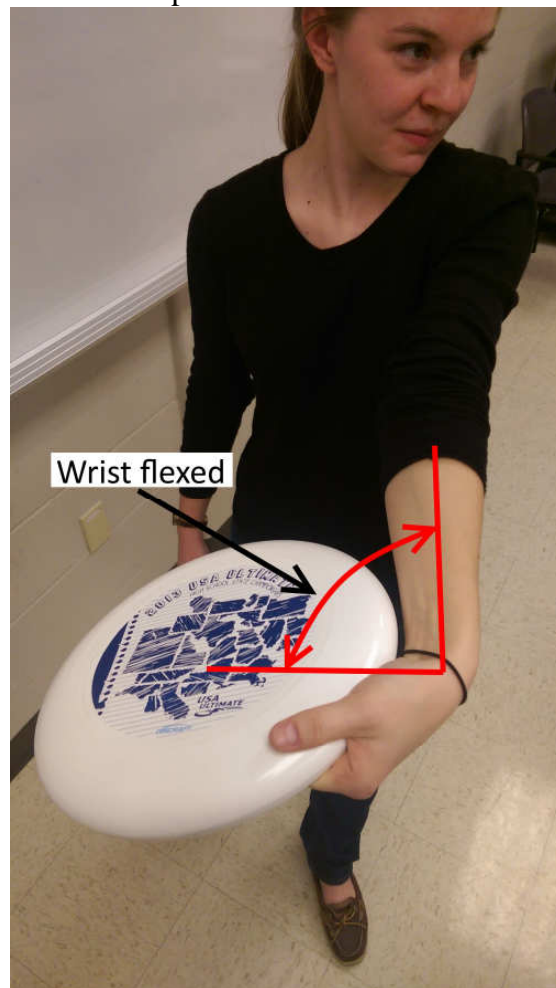
- Check the grip to make sure that the outside edge isn't angled up because of improper thumb placement. This error is uncommon, but should still be checked.
- Check to make sure that the release point is NOT up above the shoulder. While this sort of high release can (and often is) used, proper technique requires that there be significant "droop" to the outside edge. New throwers should not be attempting such an advanced throw. Throwing from above the shoulder will result in an upward plane of the forearm, pointing the top of the disc to the right (for a righty) and causing the disc to curve in that direction. The easiest way to fix this is to move the release point below shoulder level. In general, keeping the disc just below the deltoid of non-throwing arm is a good rule of thumb.
- Check that the throwing arm does not roll over during the forward movement of the throwing motion. If the palm finishes facing up, the outside edge of the disc may be raised at the moment of release causing the disc to curve to the right (for a righty). The palm should be pointed towards the throwing side or even slightly down after release.



## Throw wobbles

Wobbling throws are caused by a slow rate of rotation of the disc. The faster a disc rotates, the more stable its flight and the flatter the throw will be.

- Encourage the thrower to “snap” their wrist harder to increase the spin on the disc. Practice this by throwing short distances with minimal arm movement and only wrist snap.
- Check to make sure that the disc is “cocked” back during the backswing while preparing to release. After the arm is moved back and just before the forward throwing motion, the disc should not extend straight out from the forearm (a straight line should not pass through the elbow, wrist and outside edge of the disc). Instead, the outside edge should be behind the wrist and the trailing edge should be touching the forearm.
- Placing a finger extended along the outside rim of the disc can help create more spin but will rob power. Teaching this is not advised except in the more extreme circumstances.

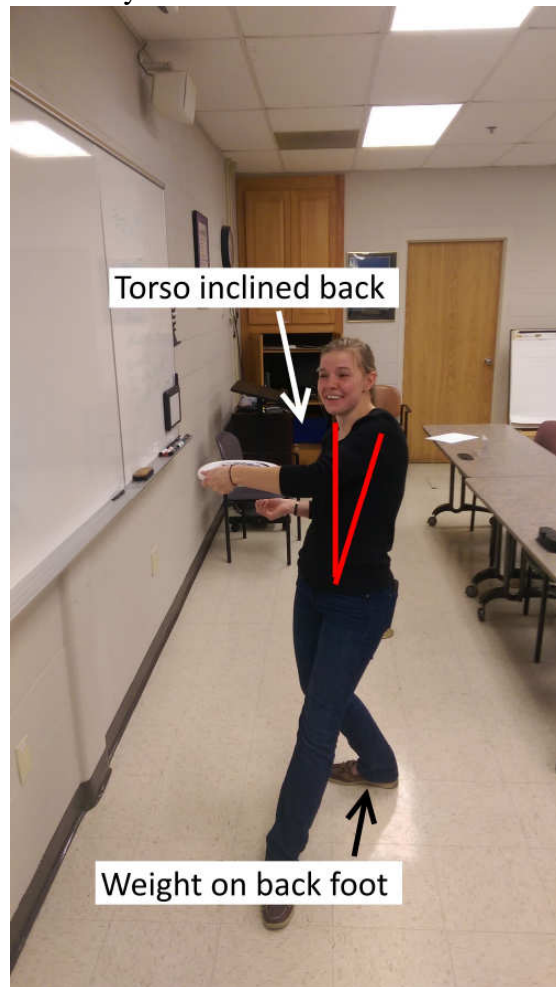




### Turfs the disc

Everyone will turf a disc occasionally, but occasionally new throwers will have a lot of trouble maintaining the proper height on their throws. Errors in the trajectory of a disc usually arise from one of two areas. Either the arm/disc is not moving forward on a level path at release or the throwers balance is off. Either of these two errors will introduce another plane of movement into the throwing motion and, therefore, add another layer of complexity, which leads to inconsistency.

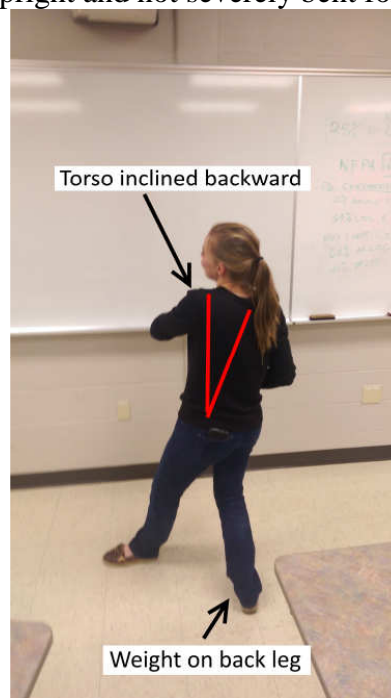
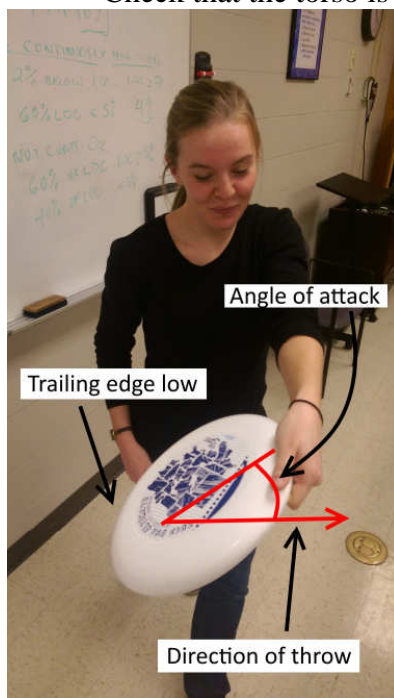
- Check that the thrower is not cocking the trailing edge of the disc up before their forward throwing motion. The disc should be flat or even slightly inverted (outside edge down) through the throwing motion.
- Check the arm is moving forward in a flat motion parallel to the ground and not swooping down and then back up.
- Check that the thrower is properly balanced at the moment of release with the weight moving forward and centered over the front foot.
- Check that the torso is upright and not severely bent forward at the waist.



## Throws are too high

As with turfing the disc, high throws will happen occasionally. Here we are interested in a thrower who consistently throws the disc too high or struggles controlling the level of the disc. Throwing the disc too high can be the result of the same sorts of errors that cause a thrower to turf a disc.

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- Check the arm is moving forward in a flat motion parallel to the ground and not swooping down and then back up.
- Check that the thrower is properly balanced at the moment of release with the weight moving forward and centered over the front foot.
- Check that the torso is upright and not severely bent forward at the waist.



### Air bounces disc

Air bouncing a disc can be a very effecting throw, but is also highly advanced. Teaching it too soon can destroy normal throwing mechanics and hurt thrower development. New throwers (less than a year of experience) should NOT be taught air bouncing and every effort should be made to flatten their throw out. Air bouncing is caused by severely lowering the trailing edge of the disc and throwing slightly down. The disc will initially travel down, but the lift generated by the low trailing edge will bring it back up again.

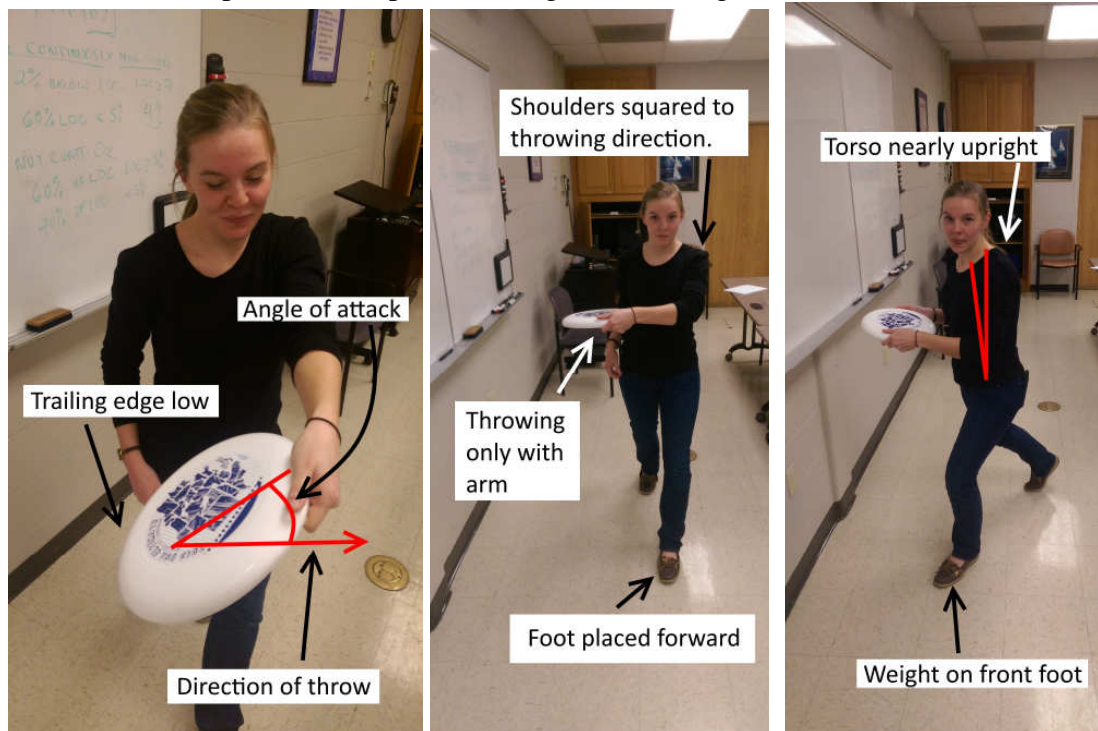
- Check that the thrower is not throwing with a swooping throwing motion (arm makes a U shape (down then up) as it is moving forward).
- Check that the trailing edge is not greatly lower than the leading edge both in their grip and at the moment of release
- Have the thrower apply less pressure with the thumb of the throwing hand as such pressure will commonly push the trailing edge of the disc down.



## No throwing power

As with the forehand, several things can affect the power on a throw. Clearly if the disc is wobbling during flight it will be robbed of power (see wobbly throw above). For a backhand, most of the power is generated by the rotational motion of the torso and so it is crucial that the thrower have step across their body and turn their shoulders to generate power. In general, more spin and a harder snap of the wrist (necessitating quicker forward arm movement) is necessary for more power. Power can also be robbed from a throw if the angle of attack doesn't match the trajectory of the throw causing the disc to move forward with too much of the underside exposed. In this case, the thrower is effectively trying to throw a sail forward and it will be very hard to achieve good power.

- Check that at the moment of release, the trailing edge of the disc is only slightly lower than that leading edge
- Watch the disc after it is release to see if the angle at which the disc flies is very close to the angle the disc makes with the ground
- Encourage the thrower to snap their wrist forward more quickly.
- Make sure the thrower leads with their shoulder and keeps their elbow in front of their wrist until the very end of the throwing motion.
- Make sure the thrower is rotating their shoulders when they throw and not just relying on arm strength. Powerful throws may require that the thrower turn their back almost completely to their target to allow for maximum shoulder rotation.
- Reach back as far as possible on backswing to increase the amount of time the thrower has to impart forward power during the throwing motion



### Throw is straight and flat but off target

Two common errors cause this sort of flight path for the disc. The first is poor timing on the release. If the release is too early the disc will fly off toward the throwing side. If the release is too late, the disc will fly toward the non-throwing side. The second cause is improper wrist snap where the wrist snaps to the non-throwing side rather than snapping up. Proper throwing form should involve a rotation of the entire forearm and not just the wrist.

- Check the throwers fingers after the release and make sure they are pointed at the target.
- Make sure the throwers entire throwing arm is pointing at the target after release.
- When throwing long distances, tell the thrower NOT to throw as hard as they can. When throwing at maximum effort, the thrower will usually tighten their grip on the disc, which may throw off their timing.



Throw	What it did	How to fix it
Forehand	Curves towards throwing side	<ul style="list-style-type: none"> <li>• Raise outside edge so disc is flat when released</li> <li>• Raise throwing hand so outside edge isn't pointed down</li> </ul>
	Curves away from throwing side	<ul style="list-style-type: none"> <li>• Lower outside edge so disc is flat when released</li> <li>• Lower release point closer to waist so disc is flatter</li> <li>• Stop arm swing so throwing hand doesn't cross midpoint of body</li> <li>• For long throws, don't throw with maximum effort</li> </ul>
	Wobbles	<ul style="list-style-type: none"> <li>• Increase spin by snapping wrist harder</li> <li>• Cock wrist when throwing to achieve maximum spin</li> <li>• Make sure fingers under disc are mostly, but not completely extended for maximum spin</li> </ul>
	Turfs disc	<ul style="list-style-type: none"> <li>• Flatten disc path prior to release (no swooping motion)</li> <li>• Maintain proper balance (i.e. not leaning back when throwing)</li> <li>• Raise leading edge for greater lift</li> </ul>
	Throws are too high	<ul style="list-style-type: none"> <li>• Flatten disc path prior to release (no swooping motion)</li> <li>• Maintain proper balance (i.e. not leaning back when throwing)</li> <li>• Lower leading edge for less lift</li> <li>• Check that fingers are pointed at the target and not up</li> </ul>
	No throwing power	<ul style="list-style-type: none"> <li>• Make sure attack angle of disc corresponds to flight path</li> <li>• Encourage quicker forward arm movement</li> <li>• Lead with shoulder, then snap through elbow with wrist coming forward last</li> </ul>
	Throw is straight but off target	<ul style="list-style-type: none"> <li>• Make sure throwing hand is pointing at target after release</li> <li>• For long throws, don't throw with maximum effort.</li> </ul>

Throw	What it did	How to fix it
Backhand	Curves towards throwing side	<ul style="list-style-type: none"> <li>• Raise outside edge so disc is flat when released</li> <li>• Raise throwing hand so outside edge isn't pointed down</li> <li>• Throw disc over off arm not under off arm</li> </ul>
	Curves away from throwing side	<ul style="list-style-type: none"> <li>• Lower outside edge so disc is flat when released</li> <li>• Lower release point closer so disc is flatter</li> <li>• Don't roll wrist on release</li> </ul>
	Wobbles	<ul style="list-style-type: none"> <li>• Increase spin by snapping wrist harder</li> <li>• Cock disc back to forearm when throwing to achieve maximum spin</li> </ul>
	Turfs disc	<ul style="list-style-type: none"> <li>• Flatten disc path prior to release (no swooping motion)</li> <li>• Maintain proper balance (i.e. not leaning back when throwing)</li> <li>• Raise leading edge for greater lift</li> <li>• Keep torso upright</li> </ul>
	Throws are too high	<ul style="list-style-type: none"> <li>• Flatten disc path prior to release (no swooping motion)</li> <li>• Maintain proper balance (i.e. not leaning back when throwing)</li> <li>• Lower leading edge for less lift</li> <li>• Keep torso upright</li> </ul>
	Air bounces disc	<ul style="list-style-type: none"> <li>• Flatten disc path prior to release (no swooping motion)</li> <li>• Raise trailing edge so disc is flatter on release</li> <li>• Less pressure with thumb</li> </ul>
	No throwing power	<ul style="list-style-type: none"> <li>• Make sure attack angle of disc corresponds to flight path</li> <li>• Increase shoulder rotation (don't throw with only arm)</li> <li>• Step across body to increase shoulder rotation</li> <li>• Lead with shoulder, then bring elbow forward and then wrist.</li> <li>• Reach back on backswing</li> </ul>
	Throw is straight but off target	<ul style="list-style-type: none"> <li>• Make sure throwing hand is pointing at target after release</li> <li>• Don't throw as hard as possible when throwing long distances</li> </ul>