

## Investigation 5: Timing for a catch

In this investigation, I will look at the best time to catch, and the best time to leave the bar (at the end of a trick).

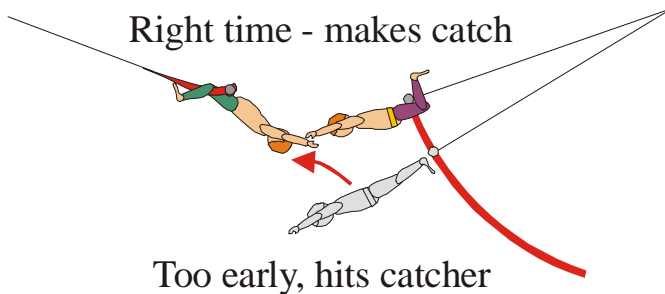
### The Catch



What is perhaps obvious about the position in the swing when the catch takes place is that it must be at a point when both the catcher and the performer are close enough to touch, this only occurs at the front end. What perhaps is not so obvious is that both the catcher and the performer must be at the very extremes of their swings.

Let us just consider the fly bar. When the performer swings, as discussed in Investigation 1, the amount of potential and kinetic energy he has is constantly changing. When the performer leaves the bar, it is important that he does not move forward (or he will hit the catcher) or back (so he moves away from his hands).

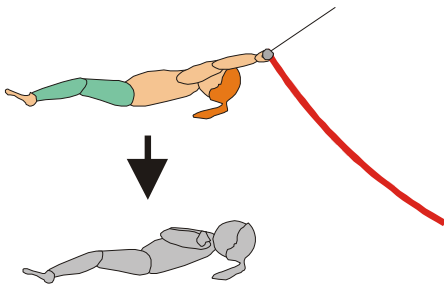
In an ideal catch, the performer doesn't move horizontally at all, and 'drops' into the catchers waiting hands. This means that the performer must have no kinetic energy. This occurs when he is at the extreme of his swing. If he leaves the bar at this point, he will have no kinetic energy, so he will not be moving forward or backwards. If the catcher is in the same position of his swing, they will both be motionless for a fraction of a second and this is the time for the catch.



A performer can be caught for a short time either side of this moment, but the catch will not be as smooth. The flyer must be especially careful not to let go before the peak of his swing. If he lets go before this stationary point, he will still have some forward momentum, and he will fly forward into the catcher. This will be discussed further in Investigation 8.

In some catches, especially tricks like a layout that involve a somersault, the performer may start a movement before the extreme of his swing, but will always let go at the same point, to ensure that while he rotates, he does not travel horizontally.

## Dismounting



Dismounting, after a practice swing or a trick not involving a catch, works on a very similar basis to catching. The performer must ensure that he does not travel either forward or back. The objective is to land underneath the point where you let go. Although there is not a catcher to hit if he travels, he could fly into the apron at either end, or the horizontal movement may cause him to flip and land awkwardly. The correct point to dismount is the same point when he would make the catch, when he has no horizontal movement and no KE. It is important to ensure that all dismounts are carefully controlled like this – landing awkwardly in the net is unpleasant!

Another simple dismount is the back flip. On the forward swing, the performer swings his legs forwards, then backwards, and forwards again (this just means that the third forward swing has more momentum than a single swing of the legs.) He then lets go, and without any extra effort his body rotates backwards and he lands on his back. The details of the trick are not important, the take-home message is that although this trick involves a backward rotation, the performer must again let go at the same moment to ensure that he does not travel.