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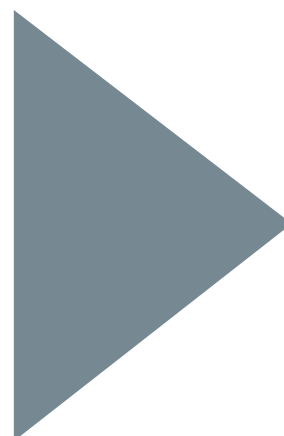
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## 1/ Preparation for catcher

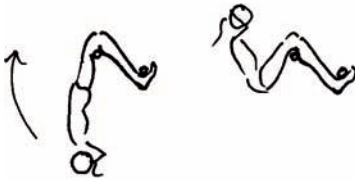
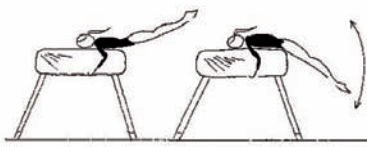
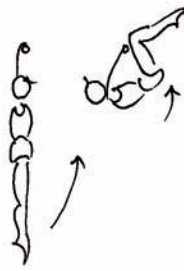
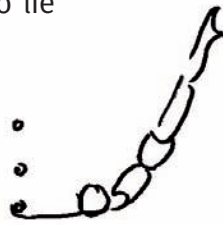

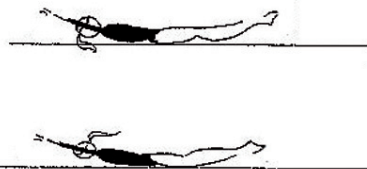
The main muscle groups used by the catcher are:

1. The abdominal group
2. The knee extensors (quadriceps, sartorius etc.)
3. The hip flexors
4. The muscles of the shoulder girdle
5. The erector spinae and rhomboid muscles in the back

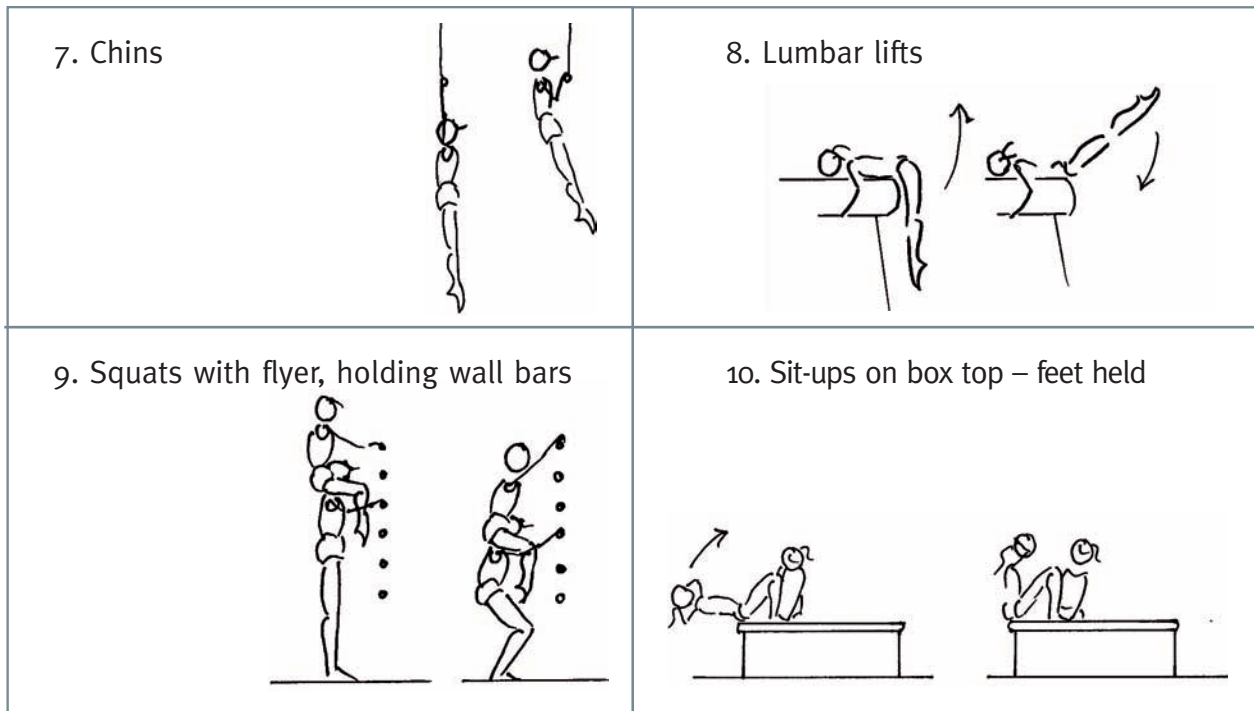
As you can see the range of strength required for the catcher covers most of the upper body and torso. It is important that any catcher has undergone physical preparation before commencing with a flyer. The preparation programme can be split into two parts

1. General conditioning
2. Specific conditioning

The general conditioning involves high repetitions of fairly easy exercises in a circuit. This can be made harder by increasing the number of reps or decreasing the time allowed to complete the circuit. A typical circuit involving most of the muscles and actions involved in cradle catching is shown below.

<p>1. Hanging sit –up</p> 	<p>2. Dorsal lift on box top</p> 
<p>3. Hanging tucks</p> 	<p>4. Shoulder stand to lie</p> 
<p>5. V-sits</p> 	<p>6. Hold dish front and back</p> 

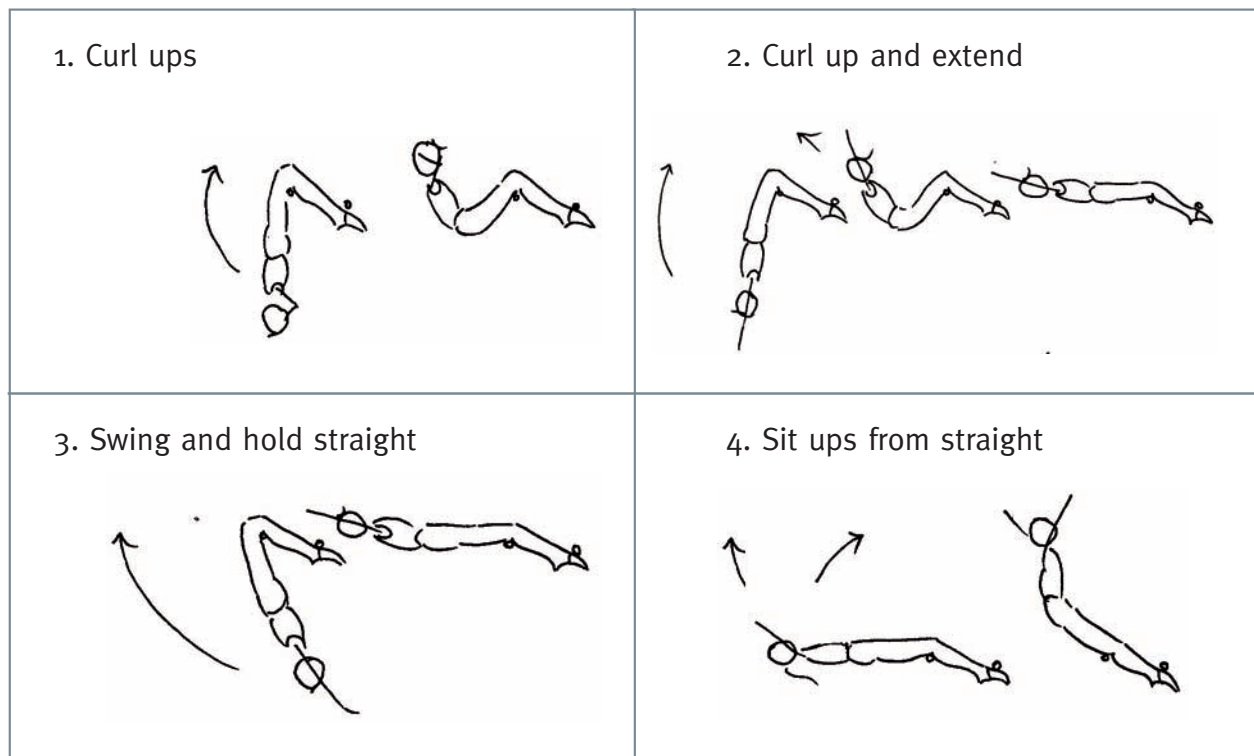
## part1/ Physical Conditioning for Cradle



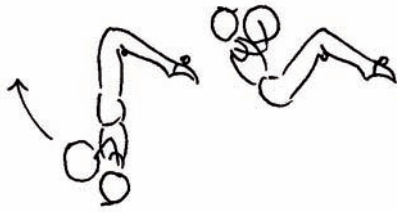
This circuit can be completed with a set time for each exercise, or with a set number of repetitions for each exercise.

**Specific Exercises:**

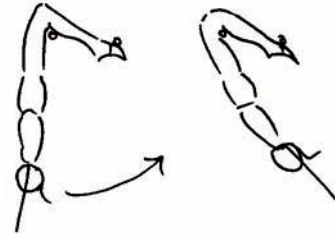
Many of the specific exercises for cradle catchers are performed in the cradle. Below are a number of preparations, this list is not exhaustive and there are many more. It is important to recognise the physical needs and weaknesses of each individual before setting a strength programme.



5. Lift from inverted to sit with medicine ball (use swing first)



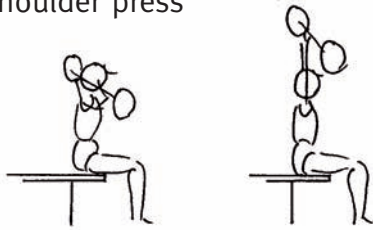
6. Dorsal lift from hang



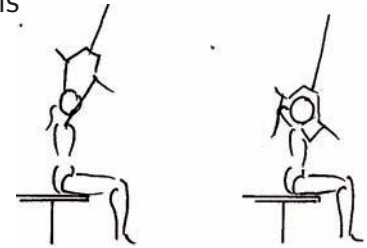
### Weights Exercises:

There are a number of weights exercises relevant for catchers, these should be done in combination with specific exercises on the cradle and general conditioning and should not be considered the only training required.

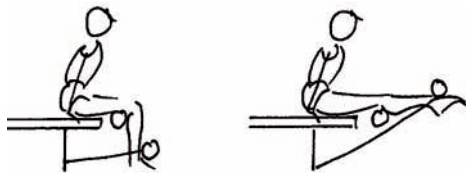
1. Seated shoulder press



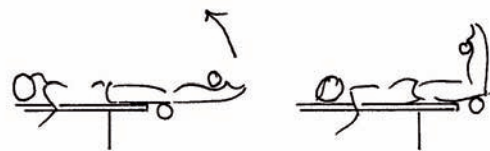
2. Pull downs



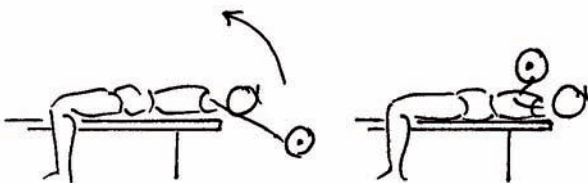
3. Leg extensions



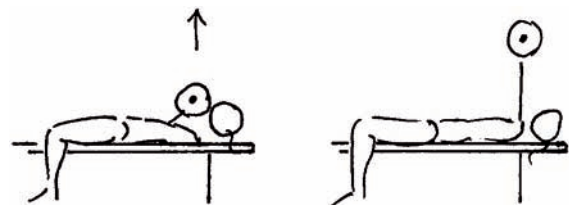
4. Upper leg curls



5. Barbell pull-overs



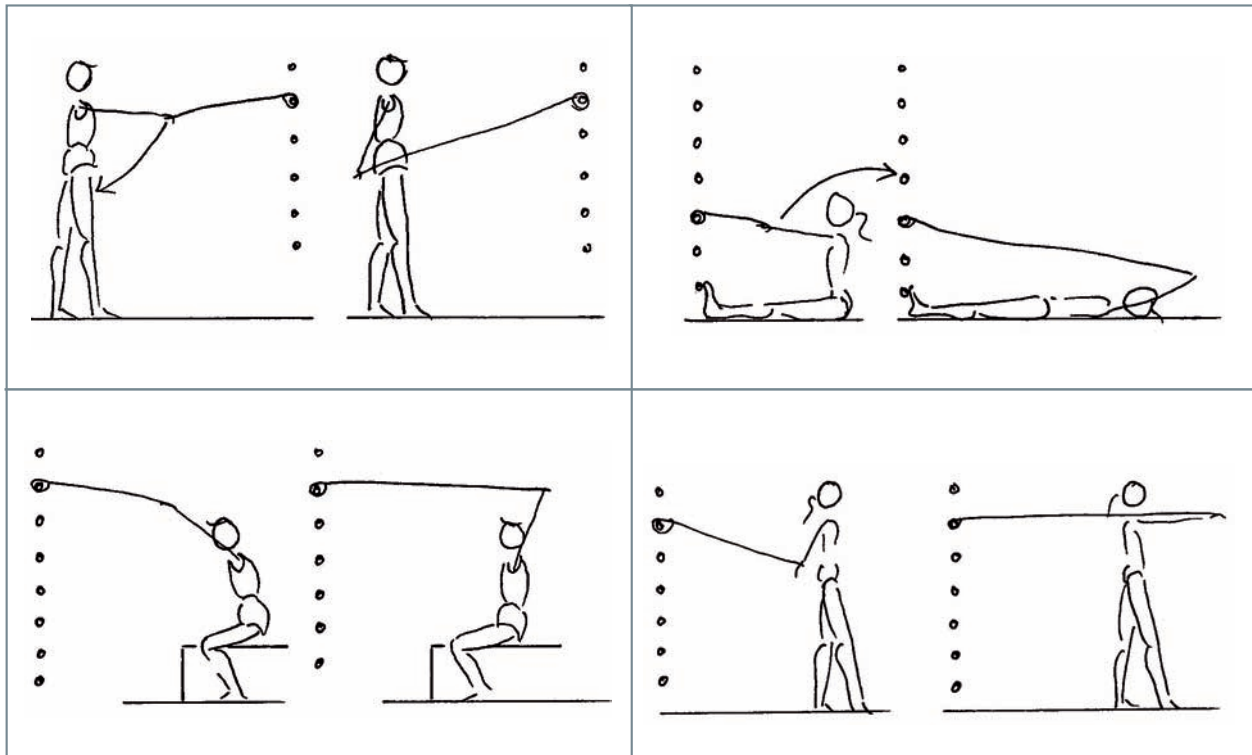
7. Bench press



### Exercises using elastic strands (bungees)

Bungees can also be used to good effect in general/specific preparation for cradle, some suggestions are shown below.

## part1/ Physical Conditioning for Cradle

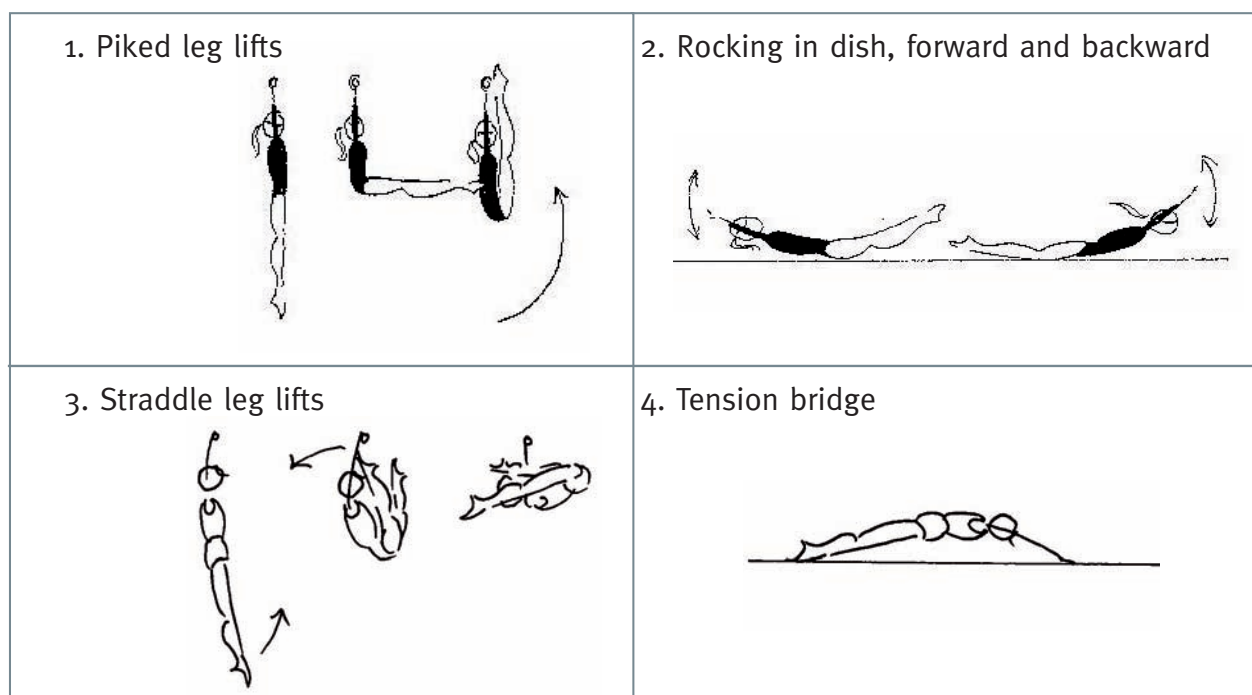


## 2/ Preparation for flyer


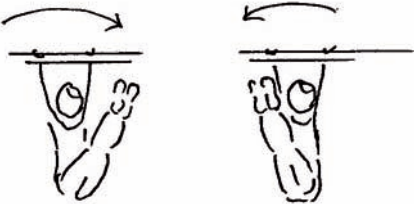

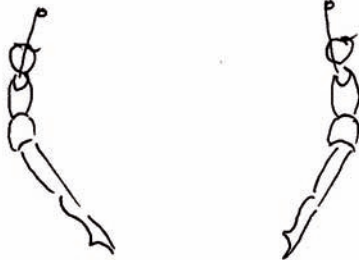
The preparation of the flyer is more to do with swing and spatial awareness than pure strength, but it is important to have excellent body tension and the action of opening and closing the mid-section also needs to be very strong. For this a number of the exercises used for the catcher are useful, specifically:

General conditioning: 2,4,5,6 and 8

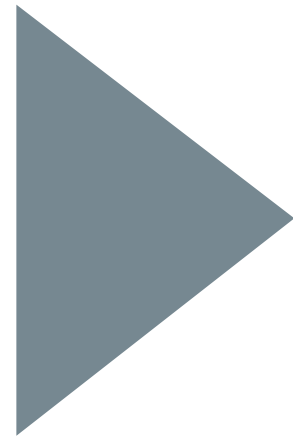
The following exercises will also benefit the flyer:



## part1/ Physical Conditioning for Cradle

<p>5. Half lever, •'5f lift</p> 	<p>6. Tick-tocks</p> 
<p>7. Handstand against wall</p> 	<p>8. Hanging body shapers (Hold 1 sec each)</p> 

Along with the preparation of strength there should also be stretching programme. The most important parts to be stretched for both flyer and catcher are the shoulders and upper back and, for the flyer, the hips and legs. These exercises are shown in the section on flexibility, so they will not be repeated at this stage.



## CRADLE BASICS

### 1/ Positions of performers:

#### Catcher:

The catcher's knees go over the near bar and the feet under the far bar. The ankles should be extended. The knees should be in alignment/parallel. Some catchers like to put the knee bar just below the knee on the top part of the calf rather than directly underneath the knee. In hang, he or she should be relaxed and extended, but maintain enough tension not to be injured by the weight of the flyer.

#### Flyer

The flyer should hang from the catcher fully extended with the shoulders just slightly pulled up. The grip between the two should be on the wrists with fingers 3 and 4 wrapped around the wrists, 1 and 2 extended along the underside and side of the wrist.



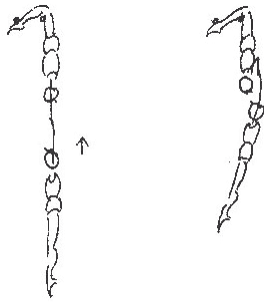
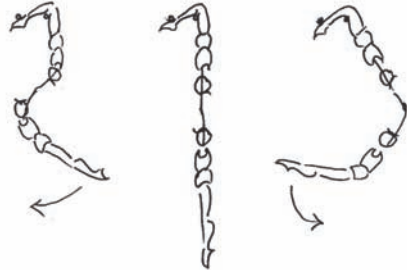
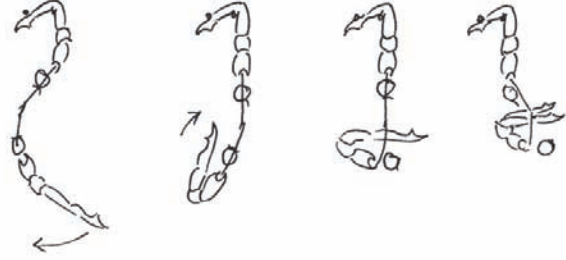
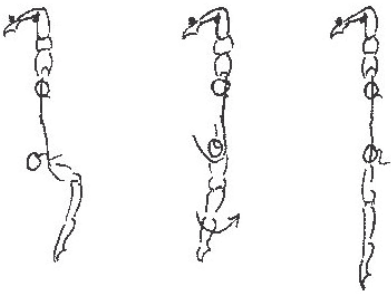
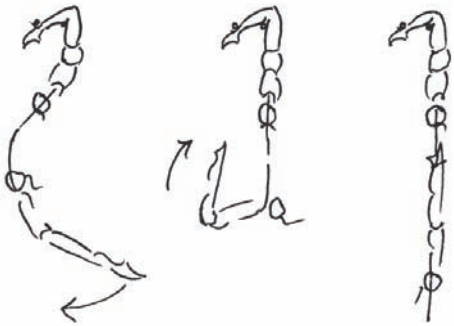
Fig 1



Fig 2

### 2/ Warm-up and basic static skills

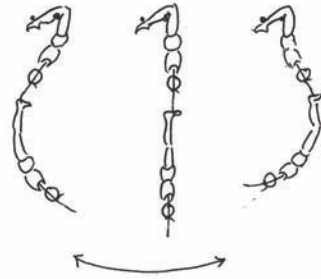
These exercises and skills can be used as preliminary skills for beginners and later as a warm-up for more advanced students. Static skills involve the flyer swinging but there is only a counter swing from the cradle by the catcher. The catcher can facilitate the movements by pushing the flyer forwards or backwards on release.

<p><b>1. Pull-ups</b></p>	
<p><b>2. Swing/beat</b> Flyer alternates from dish to hollow, fully extended The catcher swings in opposition (counter-swing)</p>	
<p><b>3. Swing to pike, stoop through and straddle</b> - Catcher must not block the counter swing - The flyer's shoulders are extended to allow the legs to come through</p>	
<p><b>4. Full turn on one hand</b> - The feet must go downwards before the release of the hand</p>	
<p><b>5. Swing, pike and catch feet</b> - This is a progression to build confidence for the correct straight technique</p>	



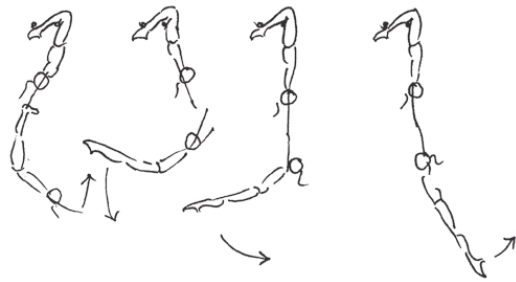
**6. Swings in invert**

- As per swings from hands



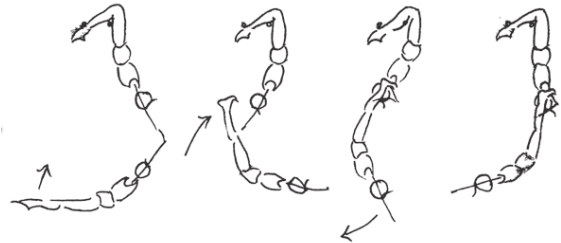
**7. Feet swing to hands**

- The body should remain straight throughout  
 - The arms are kept by the ears  
 - The catcher can assist by 'throwing' the flyers feet



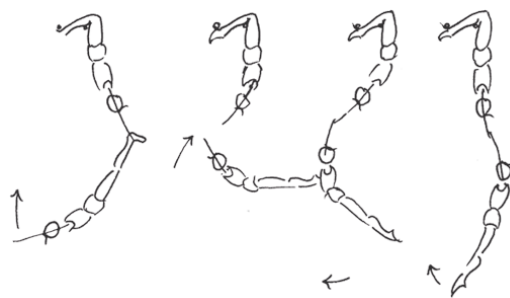
**8. Swing to catch legs**

- The flyers feet are placed around the catchers shoulders  
 - The flyers feet are flexed

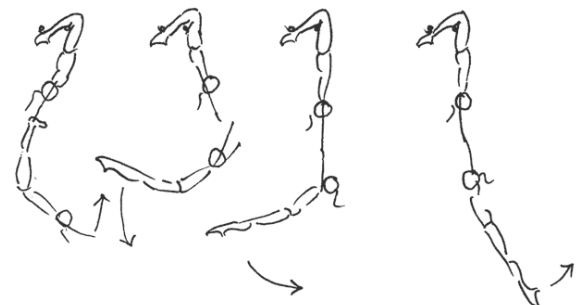


**9. Swing to catch feet (straight)**

- As in feet to hands the catcher can assist by 'throwing' the hands

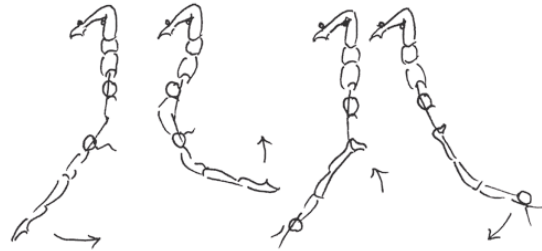


**10. Feet to hands forwards (straight)**

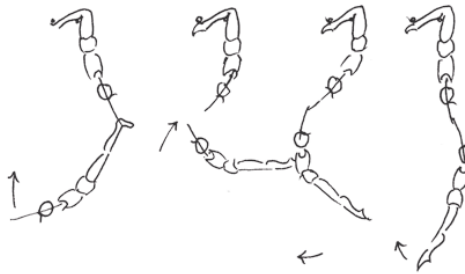


**11. Hands to feet forwards**

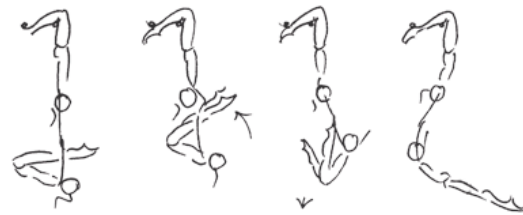
- The catcher can assist by widening the arms slightly before release

**12. Feet to hands backwards**

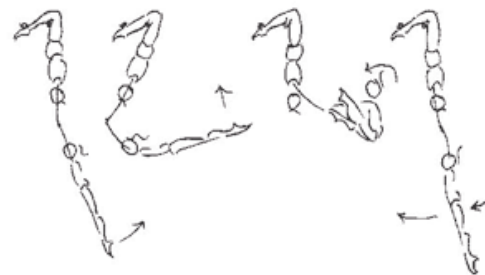
- The flyer must continue and develop the backward rotation by pressing the shoulders upwards and backwards

**13. Straddle cut**

- The flyer extends the hips and straddles
- By pulling on the catcher he/she can bring the body up to re-grasp
- The legs should be controlled downwards

**14. Front somersault to catch**

- The flyer's heels should be swinging towards vertical before releasing the catcher
- Once again the catcher can assist by 'throwing' the arms

**15. Swing to catch 1 foot**

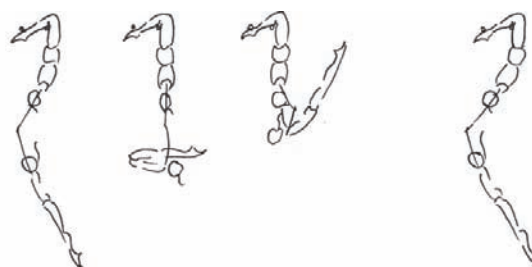
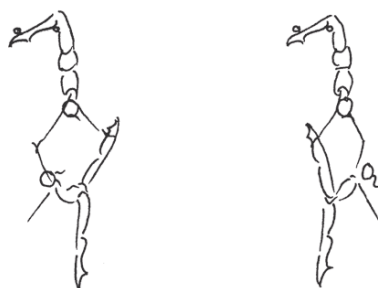
- The non-catching leg must be extended to counter-balance the body
- The caught foot must be flexed and kept turned in, as turning out will cause the body to turn



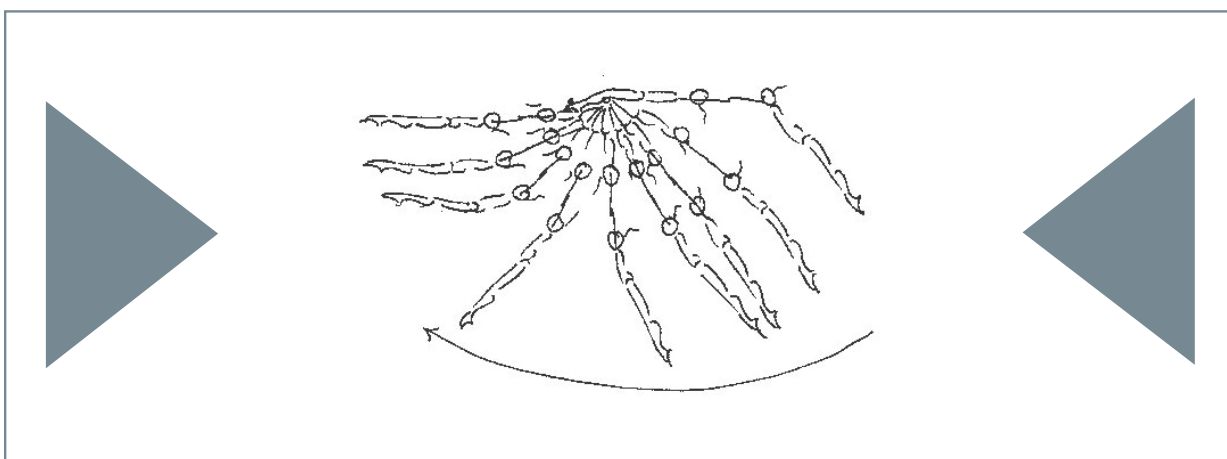
## part.2/ Cradle Basics

**16. Dislocatio**

- From pike, the hips are extended upwards and backwards
- The arms are rotated outwards and forwards
- The catcher can assist by opening the arms
- The body must arch for the swing down

**17. Swing to angel****3/ Basic swing from catcher:**

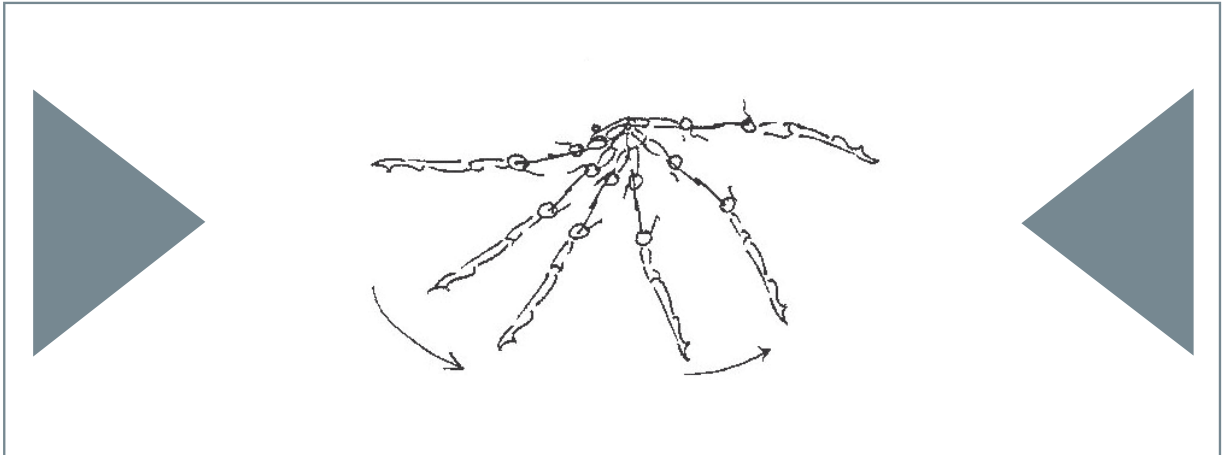
The basic swing has been the focus of much debate and the use of techniques founded in gymnastics swings differ slightly from more traditional ideas. However as has been seen in the section on biomechanics, in order to maintain an efficient swing and perform the intermediate and advanced skills on cradle it is necessary to comply with the laws of mechanics. If these laws are met, then differences in certain positions are merely personal preferences of style.

**A/ Forward swing**

- At the high point of the swing at the back the catcher is extended and the flyer should press down on the catcher, with the chest in (concave) and the head in a normal position.
- At this point the body is slightly dished. As the swing develops downwards the feet continue to lead the swing by a small amount.
- At a point around 15 – 20 degrees from vertical under the cradle the catcher presses the chest through and allows the feet to drop back creating an arch. As the swing progresses through vertical this position is developed so the body is muscularly 'charged'

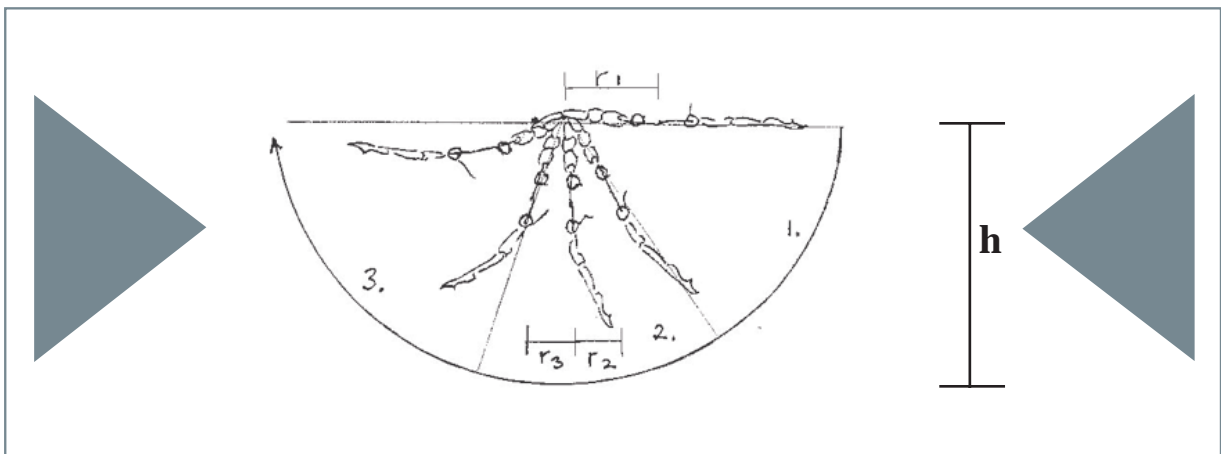
- At a point around 15 degrees past vertical the flyer relaxes the back and tenses the abdominal muscles to create a 'kick', allowing the swing to accelerate and lift as high as possible up the front

### Backward swing



- At the top of the swing at the front the flyer must maintain body tension as the swing develops backwards allowing the feet to slightly lead the swing.
- This position is maintained until the flyer is about  $20^\circ$  past vertical when he or she starts to press forwards upon the catcher so that the chest becomes concave and there is a slight dish.
- The heels continue to rise as the flyer presses downwards, the head is lifted slightly but not so much that it forces the feet down.
- The final position is back to the start point from the picture above.

The swing can be split into three different sections shown in the diagram below. For reasons of simplification the flyer is shown horizontal without the normal shoulder angle.



**B/ Phase 1**

is the swing down section. At the top of the swing there are a number of mechanical considerations.

1. The moment of inertia is at its greatest as the combined mass of the performers is furthest from the pivot point
2. The performers have their greatest potential energy due to the height (h) from the bottom point of the swing
3. At this point they have zero kinetic energy
4. As they have no kinetic energy and their movement is zero there is also no tangential force acting upon them
5. This point and the corresponding point at the front of the swing are called the stop points

**C/ Phase 2**

is the kick phase. Due to the braking effect caused by the limitations of flexion in the catcher and to lesser extent air resistance, the swing must be accelerated at this phase in order to rise to a high enough level at the front. Important points:

1. The kick by the flyer finishes past the vertical line at the bottom of the swing. If it occurs too early the swing will be taken forward and not in the upward direction of the swing.
2. At this point the flyer also creates a small angle in the shoulders and dishes the body. The combined effect of this is to decrease the moment of inertia, by decreasing the length of the body.
3. The muscular action of the flyer kicking forwards is transferred to the swing as a whole by the transfer of angular momentum principle.
4. This action also allows the catcher to lift the flyer into a correct position at the front of the swing.
- 5.

**D/ Phase 3**

is the upward swing. At this point the performers are fighting against gravity. Important points:

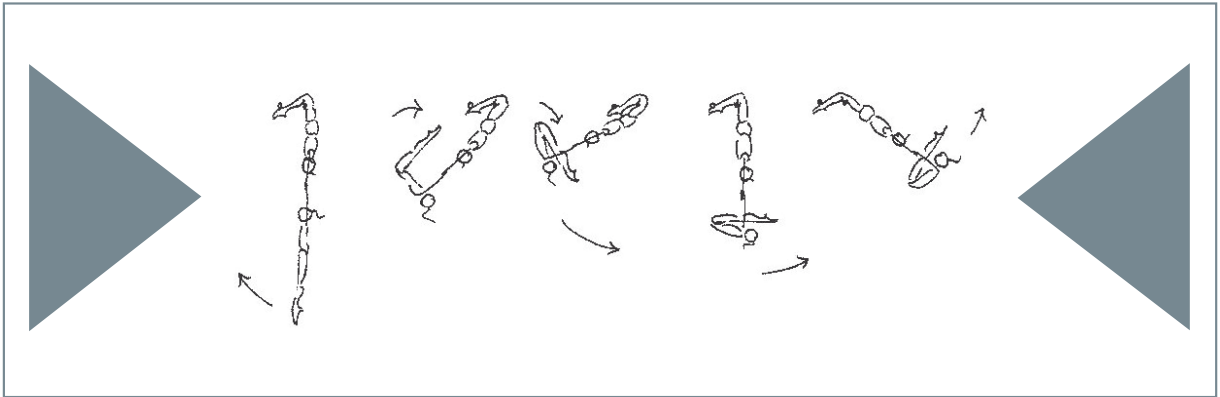
1. The flyer begins this phase with the body shortened to increase rotation
2. As the swing moves up to its highest point the flyer must stretch away as much as possible and 'lift' the catcher to as high a point as possible.
3. As the swing turns around and they begin to swing back the flyer must remain in the stretched position and the catcher must press in order to stop any angle developing between the two performers

**2/ Engagé (Devant)**

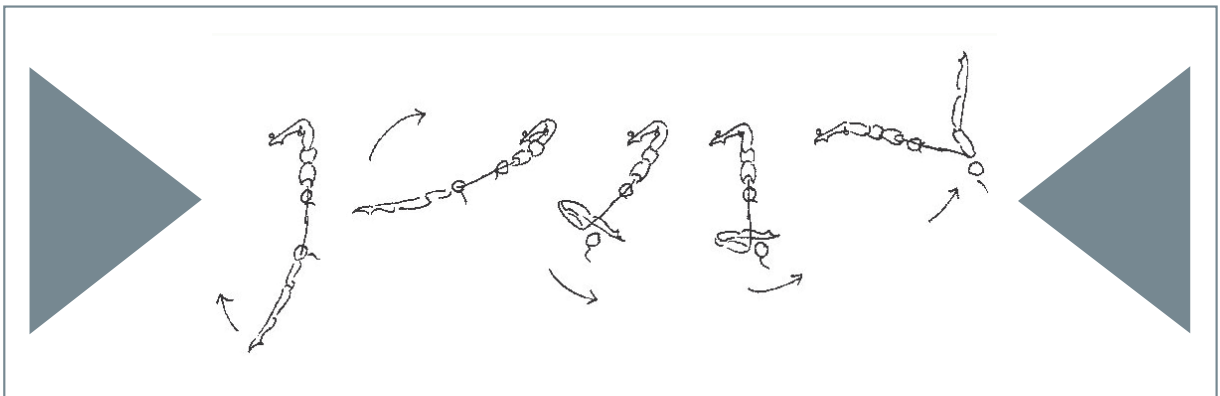
As a progression towards this skill the flyer can bring the legs in immediately at the front of the swing. The more advanced version and the correct technique is to lay out at the front of the swing and bring the legs in very quickly once the swing is going back. This

produces a much stronger swing at the back and allows the progression towards more advanced skills.

#### Engagé:



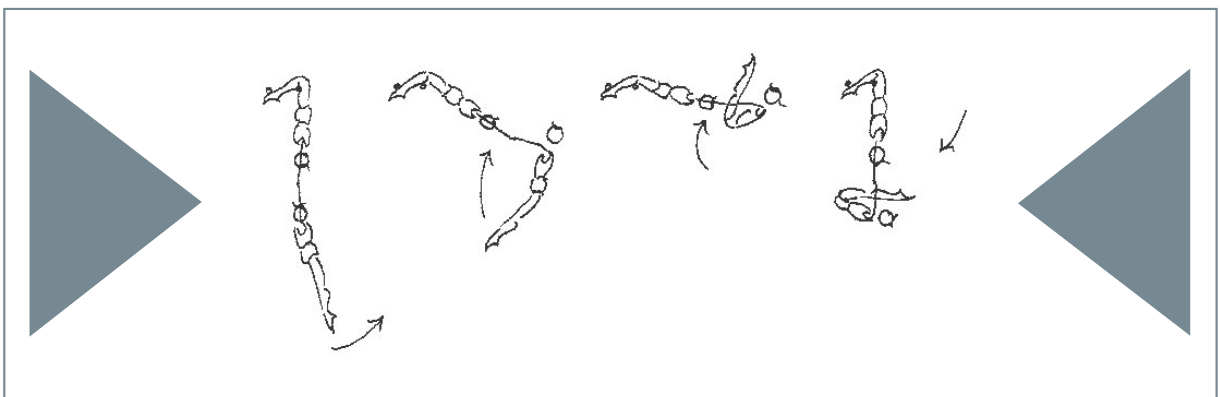
#### 3/ Temps tiroir:



In the first technique, the flyer pikes in the upward swing and brings the feet through the hands. In the second technique the body is completed extended throughout the upward swing and the feet are brought through the hands as the swing starts to move backwards.

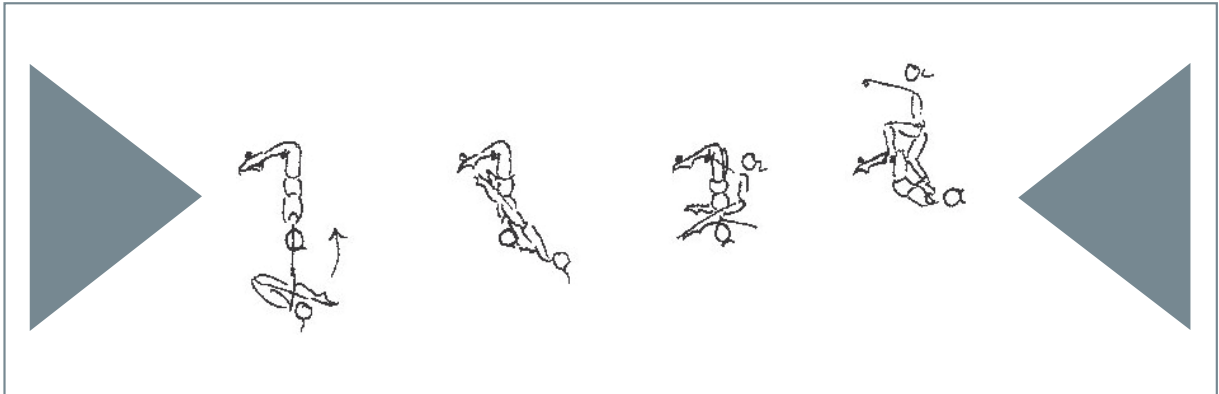
#### 4/ Engagé (derriere)

This is a fairly easy method of getting into a piked swing and can be learned at the same time as the engagé devant.



5/ Remonté (Remounting the platform)

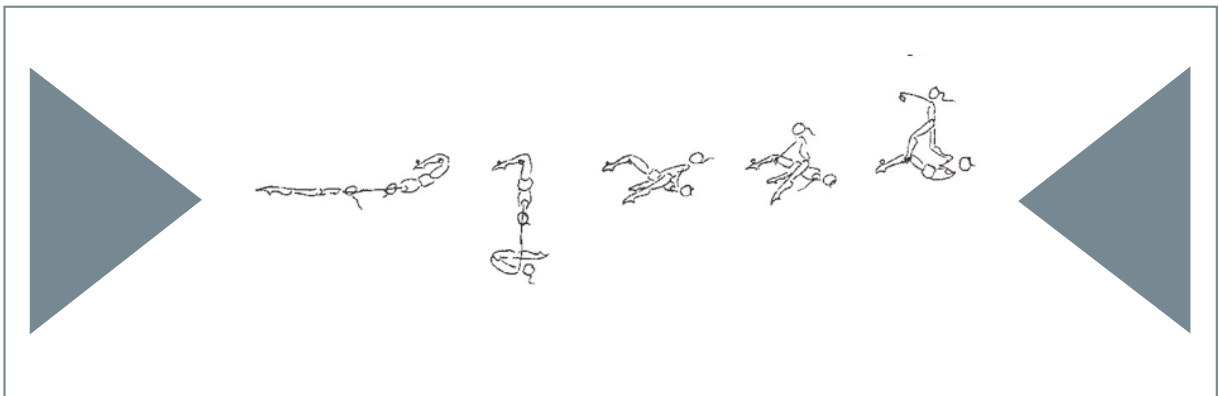
There are a number of ways to achieve this the simplest of which comes from static hang and pike.



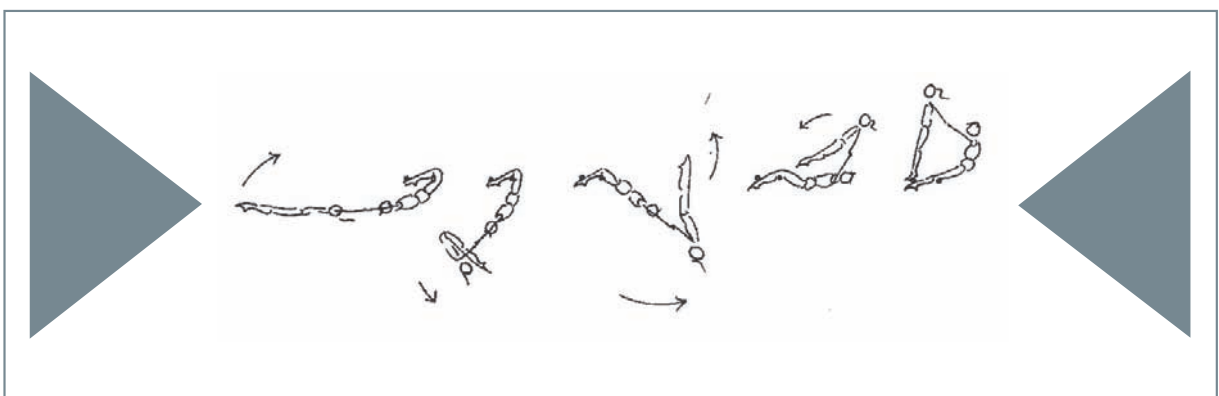
- The flyer extends the hips upwards and straddles the catcher.
- The flyer then sits up assisted by the catchers hands in his or her back.
- The legs are supported under the catchers arms.
- Once the flyer has grasped the bar the catcher takes one leg and pushes allowing the flyer to step onto the platform.

6/ Remonté from Swing

This technique can be made easier by performing it from a swing.



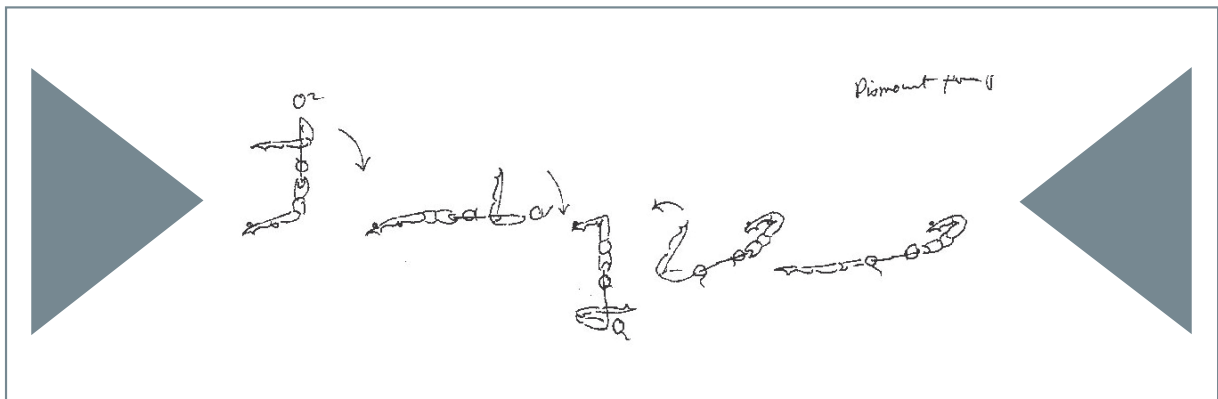
7/ Remonté From pike swing (More advanced)





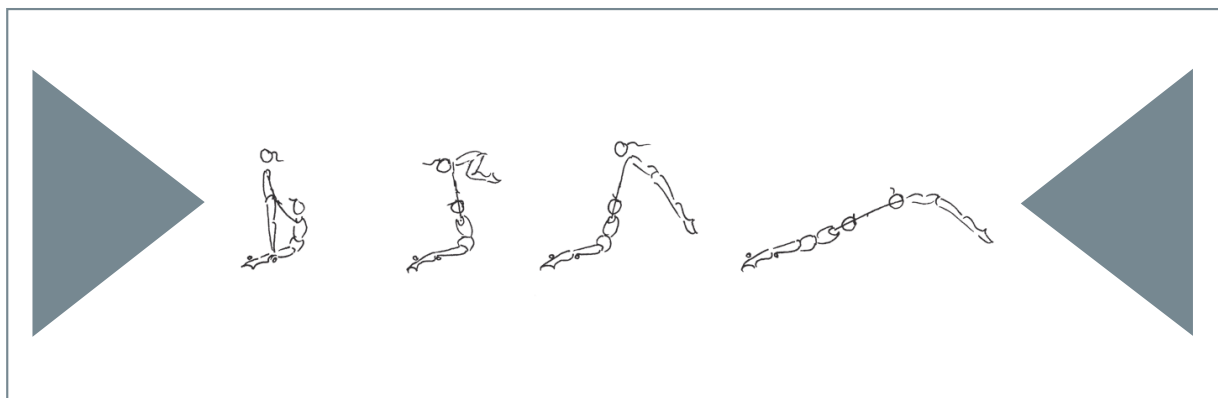
From temps tiroir, the flyer extends the body on the back swing pushing the hips upwards. As the catcher comes above horizontal he brings the arms forwards and sits up giving a support for the flyer to push on and step onto the platform.

#### 8/ Depart to pike swing (Dismounting from the platform)



The catcher lifts the flyer into a piked sit position and then swings back maintaining a complete extension of the shoulders. As the swing comes under the cradle the flyer's hips should drop a little so that the back of the knees are in line with the hips. The flyer can then extend at the front of the swing.

#### 9/ Depart normal:



The catcher lifts the flyer into support and the flyer lifts the hips as if lifting towards handstand, then extends backwards as the catcher swings back. The flyer must extend the shoulders to avoid a jerk at the bottom of the swing and the earlier this is done the greater the swing created.

#### 10/ Development of depart using floor cradle:

The principles of depart are based upon acro-balance. The catcher must give the flyer a strong support base and the flyer should be able to hold a good piked sit position and be able to lift the legs out from there towards handstand. The apparatus set-up shown below is very useful in teaching these techniques.







▲ Fig 3

The flyer stands on the bar to begin as normal (fig 2) and jumps to piked sit on the catchers extended arms (fig 3). This can be spotted from the side. From this position the catcher can extend the hips and fall back flat into the mats.



Fig 4 ▲



Fig 5 ▲

