FIREARMS TRAINING

Firearms Intermediate Level
Background

The intermediate firearms module develops the officers’ basic skills training them to use cover and tactical movement as part of their training. This is then built into the range practice to give them more realistic training scenarios.

Aim

To familiarize the FPU member with the tactical use of movement and cover in live firearms training situations combined with Stoppage solving solution and Tactical and Emergency reloading and to apply those techniques.

Learning outcomes

On completion of this module the participants will be able to:

1. Demonstrate stoppage solving solutions
2. Demonstrate Emergency and Tactical reloading
3. Demonstrate Tactical use of cover
4. Demonstrate Walking in rolling movements
5. Demonstrate Tactical scanning

Training sequence

The material in this module is designed to be delivered over sixteen-hours in at least three periods, the first two being a theoretical lesson with PowerPoint presentation, then six hours of lessons for dry practice where each of the individual techniques is demonstrated and practiced by the student. There is then eight hours for range practice, where the student will be able to practice all of the theory while shooting on the range. Instructors should note that each student will require eight hours of range practice, therefore this can be split into eight one-hour sessions, or any combination that they feel is appropriate.

Duration

<table>
<thead>
<tr>
<th>Minimum Session time</th>
<th>Lecture/Presentation</th>
<th>Question/Assessment</th>
<th>Session Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 Hours</td>
<td>2 hours</td>
<td></td>
<td>Dry practice 6 hours</td>
</tr>
<tr>
<td>Additional Options</td>
<td>Mission Specific</td>
<td>Optional film</td>
<td>Optional activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Range practice 8 hours</td>
</tr>
</tbody>
</table>
Methodology

This module contains a basic PowerPoint presentation to explain and show the various techniques. However, the majority of this module should be taught in a practical manner using the format:

- Demonstration by the instructor
- Explanation by the instructor
- Imitation by the students (with instructor correcting where necessary)
- Practice by the students until the technique is perfected

At the end of the final stage the instructor will be able to assess if the student is competent in the technique, having carried out continuous assessment throughout the preceding lessons. The students should be competent in these techniques before proceeding to combine them with live shooting practice on the range.

The instructor should inform participants of the content, format and timing. Knowing what to expect, participants can improve their ability to focus on the subject and benefit better from the session.

The range element of this should involve moving forward to engage the target at different ranges and combined with the use of cover. Therefore the range should have sufficient barrels, furniture or ditches in which the officer can take cover.

The instructor(s) will assess the students throughout the training; if the students are familiar with the weapons then it may be appropriate to reduce the amount of time that is spent on dry practice.

Instructor Profile

This module is best presented by an instructor who has practical experience in firearms in peacekeeping operations and who could share his/her experience with the group. If there is more than one instructor, at least one should have practical experience as a firearms instructor.

Instructor Preparations

Required Readings

- DPKO Policy on Formed Police Units in United Nations Peacekeeping Operations
- FPU Training Handbook
- Basic Principles on the Use of Force and Firearms by Law Enforcement Officials
General Preparations

Equipment:
1. Computer and PowerPoint slides for lesson
2. Projector and Screen for lesson
3. Training weapons for lessons

Range:
Any type of range can be used to practice the shooting, provided it is at least 20 meters in the case of handguns and 35 metres in the case of assault rifles. It will need to have figure size targets with a 45 x 45cm piece of paper placed in the centre as an aiming mark. There will also be the need for furniture, barrels, vehicles or walls for the officers to use as cover. The ideal range for this is the Close Quarter Battle simulator with street furniture and pop up targets. However it is appreciated that this is not always available, therefore the instructors can adapt a basic range with the addition of the items list to conduct a simple but realistic scenario.

Where the FPU APCs are available, these give an ideal platform for the officers to practice both the use of cover, by using the vehicle, the gun ports and the roof hatches as firing points (see photos below). It is important to bear in mind that the more sophisticated the shooting session are the more the security procedures require strict monitoring to allow the trainees to work and train in a secure environment. This is of course much more demanding for the instructors as well as constant monitoring of the trainees to ensure the students progression can continue to increase to a level of satisfaction with the hopes of advancing to possibly Advanced level.
Lesson 1 – Stoppages, Emergency & Tactical Reloading

STOOPAGES, EMERGENCY & TACTICAL RELOADING

FIREARMS INTERMEDIATE LEVEL – PART 1

UN Peacekeeping PDT Standards for Formed police Units, 1st edition 2015

Slide 1

Contents

• Aim
• Learning outcomes
• Stopage drill
• Emergency and Tactical reloading
• Summary

Slide 2
Aim

To provide the FPU members knowledge about stoppage solving solutions and Emergency and Tactical reloading which would be mastered through the drill

Slide 3

Learning outcomes

At the end of the lesson the participants will be able to:

- Demonstrate reaction for different stoppages
- Demonstrate Emergency reloading
- Demonstrate Tactical reloading
1. Stoppage drill

Intermediate firearms training addresses various topics related to the use of firearms under different circumstances. Stoppage drills involve the operator clearly understanding the mechanisms of the weapon let alone why they react in a certain manner. Firearms stoppages may involve numerous issues but the first and foremost importance of any firearm is the maintenance and cleanliness of your weapon. That’s the reason why, this part of the training is crucial to the student.

The officers should always ensure that their weapons are kept clean as dirt is often a key factor in stoppages. However, there are other matters which may also cause a stoppage and officers will learn how to identify, clear and solve them in this lesson.

---

**Keep your weapon clean!**

One of the main reasons for weapon stoppages is dirt in the mechanism or in the magazine.

---

Officer should also ensure that they check the first round in their magazine on a regular basis. When rounds are left for long periods in the top of the magazine, they can become marked or worn or become impacted. The rounds should be changed or rotated in the magazine on a regular basis. Additionally, if the rounds are left for a prolonged time in the magazine they can cause unnecessary wear on the spring which in turn may lead to the failure to feed.

The first step before trying to address any stoppages is for the shooter to locate and move behind a protection/cover and then force himself to focus in the direction of the threat as much as he can while he addresses the stoppage. Maintaining communication with the buddy team is also highly recommended, this part of the training can only be performed or practiced when the basic mechanical understanding of the weapon and principles of the stoppages and their solutions are mastered by the trainee.
Firearms Training
Firearms Intermediate Level

Slide 6

- Failure to feed/fire

Stoppages

It doesn’t matter what kind of stoppage occurs during the shooting, there are only two clearance solutions to solve them: “3 Steps solution” and “6 Steps solution”.

Under listed stoppages are fairly common pistol malfunctions:

- Failure to feed/fire
- Failure to eject
- Failure to lock
- Double feeding

The shooter has to be able to identify the stoppage and to react automatically. Mastering the drill during training will prepare the shooter to deal with it before the need arises in a stressful environment.

Slide 7

The officer operates the trigger but the round does not fire, this can be caused by a number of weapon related reasons or as human factor. Probable causes are listed in the slide.

The first issue is that the officer needs to clearly understand and identify what is happening (stoppage or empty weapon). After identifying the problem he will go immediately to the “3 Step Solution” described further down in the text.

If after the weapon is cleared using the 3 Step Solution and the weapon still do not fire then you may need to consider a mechanical defect, i.e. broken firing pin or magazine full of poor quality ammunition.
Failure to eject

Symptoms
- Inoperative trigger
- Empty shell in ejection port

Potential causes
Weapon related
- Broken or damaged ejector
- Dirty pistol extractor
- Bad quality ammunition
- Lack of lubrication
The human factor
- Shooting with an unlocked wrist
- Improper shooting behind cover (right side)

Once again the officer pulls the trigger but nothing happens and the weapon does not fire. The causes of this failure to eject can also be weapon related reasons or as the human factor as shown on the slide.

The first thing that the officer needs to do is clearly identify and understand what is happening (stoppage or empty weapon). After identification he will go immediately to the “3 Step Solution” described further down in the text.

The weapon should now be working properly. If not then you may need to consider a mechanical defect such as a broken or defective ejector.

Failure to lock

Symptoms
- Inoperative trigger
- The slide is not completely in front position

Potential causes
Weapon related
- Dirty weapon
- Lack of lubrication
- Damaged ammunition
The human factor
- Slide not properly released (followed forward)

The slide will not fully lock forwards which in turn will not allow the trigger to be
operated. The causes can be weapon related reasons or as the human factor as listed on the slide.

The first thing that the officer needs to do is clearly identify and understand what is happening (stoppage or empty weapon). After identification he will go immediately for “3 Step Solution” described further down in the text.

– 3 step solution

3 steps solution

Identification: Visual check only during basic instruction

Step 1. Tap the bottom of the magazine

Step 2. Tilt the weapon in the direction of the ejection port and Rack the slide

Step 3. Assess-Ready to fire

Slide 10

Instructors note: Slide 10 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

It doesn’t matter if the stoppage is Failure to feed/fire, Failure to eject or Failure to lock. It should always be an automatic reaction and muscle memory movement performed that can be adopted/mastered only through extensive repetition drills. Thinking under pressure in stressful situations and harsh environments is very difficult, so, the focus here is on simplicity and standardized reactions (Muscle memory).

To solve any of those stoppages shooter will be using only one unique solving technique.

The “3 STEP SOLUTION” is a simple and fast stoppage solving technique. The shooter will first tap the bottom of the magazine which is going to solve Failure to feed. Secondly he will tilt pistol to the right (that ejection port is parallel to the ground) and rack the slide. With this movement whatever is inside chamber or inside ejection port (empty shell or cartridge) will be ejected and or fall away and the pistol will be clear of Failure to fire, Failure to eject and Failure to lock.

Performing this “3 STEP SOLUTION” will allow the new cartridge to be chambered while the slide is coming forward and to the front position. The pistol is ready and the shooter shall assess the situation.
Double feeding

Symptoms
- Inoperative trigger
- The slide stays open
- The first round or shell is in the chamber, the second one takes place behind the first one

Potential causes
- Weapon related
  - Extractor-related (dirty, worn, broken) causes a product of failure to extract
  - Magazine-related (defected lips allows picking 2 rounds at the same time)
- The human factor
  - Double rack to charge the weapon

There are two main causes of this failure: one related to extraction and second related to magazine. The weapon will not fire and the slide will be partially to the rear. The causes are as listed on the slide.

The first thing that the officer needs to do is clearly identify and understand what is happening (stoppage or empty weapon). After identification he will go immediately for “6 Step Solution” described further down in the text.

6 step solution

Identification: Visual check only during basic instruction

Step 1. Lock the slide in the back position
Step 2. Remove the magazine
Step 3. Rack the slide twice to eject cartridge from the chamber
Step 4. Insert a new magazine
Step 5. Rack the slide
Step 6. Assess-Ready to fire

Instructors note: Slide 12 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.
The “6 STEP SOLUTION” is not as simple as “3 STEP SOLUTION” because the stoppage itself is more complex and takes more time to be solved.

1- The shooter will first lock the slide in the back position to release tension of the slide spring so that the magazine can be removed.
2- Then he will remove the magazine.
3- In order to clear the cartridge/shell from the chamber he will rack the slide twice.
4- Insert new magazine.
5- Rack the slide to chamber a round.
6- Pistol is ready and shooter will assess the situation.

When the weapon stops, instead of thinking and trying to identify exact what and why the weapon malfunctioned we strongly suggest the shooter go immediately to the trained reaction to solve the problem and get the weapon quickly in service.

We strongly advise to immediately and without thought, start with the “3 STEP SOLUTION” which takes only one second (less than to look at the stoppage, to identify it and only then processing for solution). You also know that if stoppage happens during the night, you will not be able to identify the stoppage, so, the only solution is to start with “3 step solution”.

If “3 step solution” doesn’t solve the stoppage (in the case of double feeding, racking the slide will not be possible) shooter will know immediately that he has to go for “6 STEP SOLUTION”. As far as the “6 STEP SOLUTION” is time consuming, shooter is advised to take a cover or at least minimize his silhouette while solving the stoppage.

Both “3 STEP SOLUTION” and “6 STEP SOLUTION” should be also practiced in movement.

The only decision that the shooter needs to make when any kind of stoppage occurs is to either go for “3 STEP SOLUTION” or straight to the “6 STEP SOLUTION” (if the stoppage is immediately identified as a Double feeding).

This approach to solving the stoppages is not based on the cause than on the solution. **The cause will not solve the stoppage, solution will!**

**Stoppage → “3 step solution” → (if it doesn't work) “6 step solution” → Assess**
2. Emergency reloading

**Emergency reloading**

When the last bullet is shot (magazine empty) and danger/potential danger still exists, the slide will remain in a back position. Upon realising that, simultaneously:

- Minimize your silhouette or go for cover
- Bring pistol closer to your body
- Release the empty magazine by pushing the magazine catch
- With your weak hand go for replacement magazine
- Keep your weapon at all times pointed at the target

Instructors note: Slide 13 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

Most pistols are designed to automatically place the slide in the rear position once the magazine is empty. Even some assault rifles mechanism is designed to lock the slide to the rear.

This automatically indicates to the shooter the weapon is empty and must be reloaded. This is known as an Emergency Reloading, and it should be conducted as quickly as possible so that the officer can re-engage the target. Officer will keep his weapon at all times pointed at the target.

**Emergency reloading**

- The empty magazine is ejected and the left hand has already picked a new magazine
- Loading with the index finger the new magazine will be inserted in the pistol

Instructors note: Slide 13 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.
*Instructors note:* Slide 14 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

It is imperative that one seeks cover or reduces their exposure as a target to begin the reloading process either going to kneeling position or to perform reloading while moving.

The magazine catch is pressed to eject the empty magazine from the weapon.

It has to be mentioned the importance of the placement of the equipment on the belt-combat vest (magazines have to be placed all the time at the same manner that shooter can take it without looking and insert it without making adjustments in a meantime).

The weak hand takes the new magazine from the pouch or pocket (to save the time which is a paramount, this should be done while ejecting the used magazine). A useful technique is to place the index finger at the top of the magazine (touching the bullet) pointing up to the weapon. The magazine is then introduced into the housing.

![Emergency reloading](image)

**Emergency reloading**

- Insert the magazine
- Release the slide forward to chamber a round
- The weapon is now again ready to fire

**Slide 15**

*Instructors note:* Slide 15 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

The magazine is inserted into place. The slide stop lever is released sliding the parts forward and charging the weapon. The weapon is now ready to fire and the target can be re-engaged.

*Instructors note:* The technique is virtually identical with an Assault rifle or sub machine gun.
3. Tactical reloading

**Tactical reloading**

If you have fired your pistol and danger/potential danger still exists, in order to be fully operational, it’s time for a Tactical Reload:

- Minimize your silhouette or go for cover
- Bring pistol closer to your body
- Pistol and eyes are pointed in the direction of threat
- At the same time go with your weak hand for replacement magazine.
- Prepare new magazine to be inserted in the pistol leading it with the index finger

**Instructors note:** Slide 16 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

Where the officer is tactically engaged with a target and there is a break in activity, they can make use of a tactical reload to ensure that their weapon has maximum round available in the event of a fire fight. It will also ensure that the officer does not run out of ammunition if they have lost count of how many rounds they have remaining in the magazine. It is of course necessary for the officer, when conducting this tactical reload, to do it from an area where he is behind cover and preferably, being capable of doing so without losing sight of the direction of the threat.

The weapon is in the loaded state with a round in the chamber. The officer selects a full magazine from their pouch with their weak hand never releasing inserted magazine before the new one is prepared to be inserted.
**Instructors note:** Slide 17 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

The weapon is brought into the body but still pointing in the direction of danger. The magazine catch is engaged and the part loaded magazine ejected into the weak hand (see illustration).

---

**Instructors note:** Slide 18 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

The fresh magazine is inserted into the weapon and the part loaded magazine is placed back into the pouch taking care not to be mixed with full magazines. The
weapon is/was already loaded so there is no need to rack the slide, the target can now be re-engaged.

As already aforementioned, in the conduct of the training, trainees will have to be trained to carry on these two manoeuvres, (emergency and tactical reloading) without looking at the weapon and keeping the focus on the dangerous direction. During the dry fire and during the live ammunition shooting practice speed should be imperative along with protection either if trainees seek cover or reduce their exposure as a target to begin the reloading process either going to a kneeling position or performing a reload while moving.

<table>
<thead>
<tr>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Different types of stoppages</td>
</tr>
<tr>
<td>• Failure to Feed/Fire</td>
</tr>
<tr>
<td>• Failure to Eject</td>
</tr>
<tr>
<td>• Failure to Lock</td>
</tr>
<tr>
<td>• Double feeding</td>
</tr>
<tr>
<td>- 3-Step and 6-Step solution</td>
</tr>
<tr>
<td>- Emergency Reloading</td>
</tr>
<tr>
<td>- Tactical Reloading</td>
</tr>
</tbody>
</table>

Instructors note: The officers should be given a summary of the key points of the lesson before being asked if they have any questions

QUESTIONS
Lesson 1 – Practice

The remaining lesson is for practice of the weapon handling skills by the students and is at the discretion of the instructors when they have assessed the level of knowledge of the students.

It should be noted that students must be competent with these drills before they progress to live shooting practice on the range.

This practice should be taught in a practical manner using the format:

- Explanation by the instructor
- Demonstration by the instructor
- Imitation by the students (with instructor correcting where necessary)
- Practice by the students until the technique is perfected
Lesson 2 – Firing from Cover, Tactical Scanning, Walking in Rolling Movements

FIRING FROM COVER, TACTICAL SCANNING, WALKING IN ROLLING MOVEMENTS

FIREARMS INTERMEDIATE LEVEL – PART 2

UN Peacekeeping PDT Standards for Formed police Units, 1st edition 2015

Contents

- Aim
- Learning outcomes
- Firing from cover
- Walking in rolling movement
- Tactical scanning
- Summary
1. **Firing from cover**

As when using any form of cover, the officer must conceal as much of himself as possible to reduce the size of the target he exposes to the suspect. Standard positions can be adopted for this purpose.

Note that the officer has adopted the standard stance in this case but so that the whole of the body is behind cover, they then lean toward the corner so that their target area is substantially reduced.

The distance from the corner of the wall for the officer has to reconcile the best possible protection and good view on the targeted area. However, it is important to bear in mind that the officer should avoid to stand too close from the wall since, in case of a ricochet, the closer the officer is from the hit surface/wall, the more
likely he is to be hit by the bullet, (the narrower the angle the more likely the shooter is to be hit).

Front stance, right corner

Slide 5

Front stance, right corner

Slide 6

Exactly the same principles apply to a corner on the opposite side.
In the kneeling position the same principles apply and either of the kneeling positions can be adopted. It is important to keep the three points of contact and this can be difficult when leaning to look around the wall.

Kneeling position behind the corner should be adopted in some kind of frontal kneeling position where outside leg is always positioned to kneel and inside leg extended on the side for counterbalance. Using this way the body exposure is minimal.
Kneeling, right corner

Slide 9

Kneeling, right corner

Slide 10
Once again the same applies to a corner on the opposite side although if a right-handed shooter is firing around a left-handed corner they are likely to have to expose more of their body, particularly when using an assault rifle. This is why the selection of appropriate cover is so important in tactical situations.

As a part of the intermediate firearms training in technical preparation for tactical progression it would be advisable to dedicate a part of the training to transition of firearms (especially assault rifle) from strong to weak side in order to minimize the exposure of police officers.
2. Walking in rolling movements

**Instructors note:** Slide 13 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

Walking in rolling movements is a walking technique used during the tactical progression which is done to maintain a stable shooting platform, to reduce the noise and to explore the ground while walking without losing threat awareness.

When moving forward towards the target the weapon should be pointed in the direction of the threat, the weapon should be in the High ready position so that a target can be engaged with the minimum of additional movement and at speed. The officer should reduce their height and centre of gravity by bending the knees and taking short and narrow steps (in line) with the feet rolling over the edge as they move. While moving forward the body weight is on the back foot. The movement is the same forwards or backwards. While moving backward the body weight is on the front foot.

The purpose of concentrating the weight on the leg opposite of the direction of our movement is that the leading leg can explore the ground while our eyes are focused on the threat. Balance is kept by the support leg even if something comes as an obstacle under the leading leg. The purpose is to keep the eyes and the weapon at a constant height, aimed at the direction of the threat. It is easy to measure how properly this technique is mastered by observing the officer’s head as he demonstrates the technique. The student should maintain a steady glide with minimal variation in height (head movement) while progressing and moving about.
Walking backward in rolling movement

- Point weapon toward danger area
- Eye and sights aligned (danger area)
- Lower your point of gravity
- Short steps, narrow walk.
- Heel up while the foot is being moved back and land with toes
- Rolling movement

Slide 14

Instructors note: Slide 14 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

Walking forward in rolling movement

- Lower your point of gravity
- Short steps, narrow walk
- Rolling movement over the edge of your foot
- Land with the heel and roll the foot down on the ground
- Weight is on the back leg

Slide 15

Instructors note: Slide 15 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.
Walking backward in rolling movement

- Lower your gravity point
- Short steps, narrow walk
- Rolling movement over the edge of your foot
- Land with the toe and roll the foot down on the ground
- Weight is on the front leg

Slide 16

Instructors note: Slide 16 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

3. Tactical scanning

Tactical scanning

- Used during Tactical Progression to gain larger perspective of the surroundings, without losing any fire readiness
- Should be performed in a slow controlled movement
- The head and eyes are always moving together, weapon moves few degrees after and lower
- The weapon is in High ready position

Slide 17

Instructors note: Slide 17 is animated to show the movement to the students. Therefore the copy of the PowerPoint on the accompanying resource disc must be used for this lesson.

Tactical scanning give the officers the ability to use their full range of vision without narrowing it down to the sight picture while still having the weapon ready to fire with minimal movement.
The weapon is held in the High Ready position so the target can easily be engaged, as the eyes and head move from one side to the other, the weapon moves few degrees above and below them. The movement should be slow and controlled.

Tactical scanning in movement should be used in combination with walking in rolling movements.

<table>
<thead>
<tr>
<th>SUMMARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firing from cover</td>
</tr>
<tr>
<td>• Standing position-left and right corner</td>
</tr>
<tr>
<td>• Kneeling position-left and right corner</td>
</tr>
<tr>
<td>• Environment adapted positions</td>
</tr>
</tbody>
</table>

Walking in rolling movements

Tactical scanning

---

**Instructors note:** The officers should be given a summary of the key points of the lesson before being asked if they have any questions

---

UN Peacekeeping PDT Standards for Formed Police Units, 1st edition 2015
Lesson 2 – Practice

The remaining lesson is for practice of the weapon handling skills by the students and is at the discretion of the instructors when they have assessed the level of knowledge of the students.

It should be noted that students must be competent with these drills before they progress to live shooting practice on the range.

The range practice is at the discretion of the instructors under the criteria laid down at the start of these lesson notes.

Instructors should strive to make the shooting practice as realistic and interesting as possible, they should allow the officers to progress down the range and provide cover for them to use when engaging the targets. ‘Pop up’ or turning targets are very useful for this type of shooting. See also the comments above with regard to the use of APCs. The only restriction on realistic training should be safety.

This practice should be taught in a practical manner using the format:

- Explanation by the instructor
- Demonstration by the instructor
- Imitation by the students (with instructor correcting where necessary)
- Practice by the students until the technique is perfected