

Developing internal pulse

Richard Steggall

Introduction

If you're reading this article, you're probably a professional musician – a performer, a teacher, or both. To forge a career in music, you have to possess an excellent internal metronome: you need to have developed an ability to feel the pulse of a piece of music, and to subconsciously count in your head while you're playing. But do your students know that's what you do?

The only way a listener can tell if a musician has a solid internal metronome is by listening to them playing, and being satisfied that the music created matches their own sense of pulse – their own internal metronome. Although we all know musicians who are better at keeping in time than others, we can safely assume that we all have a decent sense of pulse.

But your students will not necessarily be blessed with the same skills. They can't 'see' your internal metronome, and without their own version, they can't hear yours either. We need to understand that to a young musician, the idea of an internal metronome can be just an abstract concept. It's a bit like gravity: we can't see it, but we know it's rather useful. Without it we would just float around in outer space and lose our sense of direction. So if our students are floating upwards towards the ceiling in terms of pulse, let's not get angry and upset. Instead, let's find practical ways to help them down.

We could, of course, just shout 'COUNT!' at them every time they cut a long note short or 'PLAY IN TIME!' whenever they lose their pulse to correct a wrong note. I'm sure this is what many of our own teachers did to us, and in turn we worked hard to try to minimise the times we were shouted at.

However, you may like to consider (if you haven't already) an alternative method. We should assume that every new student we teach has little sense of internal pulse, so we have to work proactively to develop it. As we get to know the student better, we can then decide how much work they need to do. Is it something that needs improving, or just maintaining?

You've either got it or you haven't...?

When it comes to pulse, many of us consider nature, rather than nurture, to be the heavier influence. Of course, when a student first arrives with us, their background and upbringing will greatly affect if they've a developed sense of pulse, but there's still much we can do to encourage it. Personally, I consider that **all** my students have some sense of pulse, but that they can also all improve.

Pulse is not something that should be left to chance. You wouldn't expect a new student to have any technical ability on the instrument they're starting, and every teacher is fully prepared to give them all the help they need. We need to do the same for pulse. Without it, playing in every setting has its problems. And the same problems creep up time and time again. Beware of a new student who's already begun and given up on a couple of instruments before. Because of their previous musical skills, they often appear to be making quick progress (making a sound, reading the notes etc). It can later transpire, however, that they're struggling considerably with pulse. The chances are that it was this same issue that held them back on their earlier instruments.

A beginner student with little sense of pulse can present their own problems, but even harder is adopting a more developed student with similar issues. Intensive pulse work is recommended here. One of the key reasons behind a student failing to develop their sense of pulse may be that they've always prioritised the notes. This may display itself as a desire to get the notes correct that takes precedence over anything else. A key symptom is immediately adjusting an incorrect pitch to the desired one, with no regard for the extra time that this adjustment has taken.

Remember the wise saying: 'A right note in the wrong place becomes a wrong note!'

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See [Music Teacher, September 2022](#), for a resource devoted to establishing rhythmic foundations.

What is an internal metronome?

We probably all have some idea of what an internal metronome is. Every child will have had the experience of listening to their heartbeat, and most will understand the constant rhythm of a ticking clock (although in our digital age, it's becoming a far less common sound). As musicians, we recognise these regular pulses and use our imagination to internalise them. There's no sound or movement involved. Your brain already has a built-in internal metronome for performing rhythmic actions such as walking, and we can adapt this internal metronome to assist in making music.

Although definitions are often interchangeable, I see pulse as the regular framework onto which we place rhythm (a series of sounds of varying lengths). You create a pulse with two pieces of information: tempo and time signature. A simple way of externalising a pulse is to count out loud: 1, 2, 3, 4, 1, 2, 3, 4, 1, 2, 3, 4, etc, with a steady beat.

Strategy

You will need to develop a strategy for pulse to fit in with your own teaching style. Your strategy should be flexible so that it can help students with varying degrees of ability, and it should also be relevant to whatever repertoire they're working on.

The first word that teachers often think of when pulse is mentioned is 'metronome'. Although many musicians break out in a cold sweat at the very mention of the word, they are extremely useful devices. But we should also add a caveat: they are useful devices, **if** used smartly and with purpose. The aimless use of a metronome to develop a student's sense of pulse is, although better than nothing, not the answer.

We're seeking to develop the **internal metronomes** of our students. We want them to be able to independently feel the pulse of the music they're playing without any external assistance. The issue here, as highlighted above, is that the concept of an internal metronome is a rather abstract one. Instead of jumping in with this, we start by using external sources to help, and the physical metronome is one of those sources.

External vs internal pulse

Before we can help develop their internal metronome, a young musician must understand what pulse is. We can only demonstrate this using external sources, for example the teacher counting out loud, a metronome, a drum beat or a backing track. The student and teacher can then count together, clap together or move together. This can develop into a call-and-response exercise where the student is creating their own pulse for the first time.

Most of our initial games and exercises use an external pulse. Tapping the foot while playing is a topic that can spark heated debate. Although it's controlled by the musician's brain, foot-tapping is nevertheless an external pulse. It has movement and sometimes also sound. If a player always taps their foot, they can develop a dependency on that external pulse. This is the same problem as if you constantly play with a metronome, or a rhythm section, or even simply studiously following a conductor. Eventually that external pulse needs to be internalised. In the case of a serial foot tapper, encouraging the smaller movement of a big toe in a shoe can be a step in the right direction (if you'll excuse the pun).

When thinking about external and internal pulse, consider how children learn to write. When they first form letters, they write on paper with a number of guidelines. Eventually, they move to writing on a single line and only then do they attempt to write on plain paper. When starting with your students, always give them the guidelines (external pulse) until they're confident enough to be able to imagine their own (internal pulse). Also be aware that if your students' playing starts to get sloppy and lopsided, you should probably give them some guidelines back.

Different instruments

I'm a brass teacher. The mouth and both hands are involved in playing brass instruments, so about the only place you can externalise pulse is in the foot. Some students attempt a rocking motion on every beat, and although this is evidence of a strong pulse in action, it's not the path to technical excellence.

Other instruments are, of course, different. For example, stringed and keyboard instruments (apart from maybe the melodica) don't use the mouth to play, so counting out loud is possible. This is an external pulse, and therefore can and should be used as a practice tool. (It should be noted that the exercises below are for all instruments so no simultaneous speaking and playing occurs: please feel free to adapt them to your own instrument.)

Whatever instrument you're playing or teaching, however, there will be an aspect of movement where the rhythm is the same as the pulse (for example, regular crotchets in a simple time signature). This might involve the bow on a stringed instrument, the fingers on a keyboard, or the tongue on a wind instrument. The instruments most associated with pulse, however, are percussion, particularly drums. Pulse and rhythm are so important to drummers because other musicians rely on them to provide a very audible external pulse. But do drummers need a **stronger** internal metronome than other musicians? I would say no. Instead, **all** musicians should be encouraged to develop their own internal metronomes until they're as strong as those of drummers. (The term 'drummer in your head' is one I often use with my own students.)

Initial focus in lessons: keep pulse at the front of your mind

To successfully develop your student's sense of pulse, you must have it at the front of **your** mind. From the very start of the lesson, pulse should be present in everything you do.

One of the problems with recognising our students' need for proactive help with pulse is that we often take our own sense of pulse for granted. When we demonstrate, we usually just start playing, knowing that our strong internal metronome will kick in the moment our first note sounds or inhale occurs. If our students try to copy us by just starting to play, it should come as no surprise that their pulse might be weak.

If you want your students always to count themselves in with a clear, settled pulse, you must do the same when you demonstrate. For a simple beginner's 4/4 piece that starts on beat one, give yourself a two-bar count in. Count the first bar out loud, then follow it with a bar of silent beats with whatever preparation you need to do for your instrument. (For a wind instrument, for example, I would inhale on beat 4 or beats 3 and 4 of the second bar, depending on the tempo.)

Tools

You can teach pulse well using just your voice and body, but a few additional tools can be very useful. Many of us grew up playing along to a physical metronome when we were studying. Although they served their purpose, the wider capabilities of metronome apps are definitely worth exploring. Below is a list of tools that can prove useful while teaching pulse. Although you'll probably always want your students' final performances to be acoustic, without the restraint/support of a rigid timing device, an iPad and speaker might well play a key role in the early part of lessons.

- ▶ Metronome app (preferably) or metronome
- ▶ Drum kit app
- ▶ Bluetooth speaker
- ▶ Backing tracks
- ▶ Piano or other 'accompanying' instrument
- ▶ Printed duet parts to play on your instrument
- ▶ Improvisation skills on your instrument

Teaching method

It might be worthwhile splitting your lessons into two components (which is what I do): exercises (labelled as 'games' for younger students) and repertoire. Exercises can be done at the beginning of the lesson, and lead into repertoire. There is some crossover between the two elements – scales, for example, could be exercises, but are also part of repertoire if they're in the key of the piece being worked on. Exercises work particularly well in group teaching and can be great fun. It's even sometimes possible for one of the group to play the role of 'teacher'.

Copying

The best way to start your students thinking about pulse is to demonstrate that **you** are also thinking about pulse. As mentioned above, before students can understand that you internalise your pulse, you have to externalise it. Copying exercises are a good way to begin lessons, and they can easily incorporate a strong element of pulse.

Copying game

- 1 Start a drum app (or a metronome, or even just tap your foot loudly if you have nothing else). It's easiest to start in 4/4.
- 2 Count 1, 2, 3, 4 out loud, and then encourage your student or students to copy immediately. This sets up a pattern of one bar for the teacher and one bar for the student. Do this until it's well set and secure.
- 3 Then progress by missing out some numbers (eg 1, 2, -, 4). Finish this counting section with 1, -, -, - to encourage silent counting on the missing numbers.
- 4 Now move to using sounds and/or body percussion instead of counting. Start with all four beats (maybe four hand claps) and move through to making a sound on just beat one (maybe a loud shout of 'Hey!') as in steps 2 and 3 above.
- 5 Move on to instruments, and again follow the pattern of steps 2 and 3. Start with four repeated notes on the beat (to mimic the 1, 2, 3, 4 count) and then progress by leaving out beats until you're just playing on beat 1.

The exercise above is for beginner students, and variations can be added:

- ▶ More advanced students can start with instruments, or at least skip step 4.
- ▶ You can add pitch variation when playing, but be very clear in your instructions (eg 'I'm going to start on a C, and if my pitch changes it's only going to move by step in C major'). You want the focus to be on the pulse and not have the student worried about playing the correct notes.
- ▶ Subdivision can be used, but make sure you don't subdivide the last beat as this can lead to confusion.

Repertoire: copying with one-bar rests

It's better to limit the amount of repertoire copying that you do in lessons, as generally you should want your students to get the sound of the music off the page for themselves into their imagination. However, with an external pulse, copying music can be a very useful exercise.

Start a drum app or metronome. Instruct your student that you'll play the first bar of the section of the piece you're working on. They should leave one bar's rest and then copy. You then leave one bar rest and play again. If the copying is a good match, you can move onto the next bar, but if it's not quite there, you simply repeat the same bar. If it's not quite right a number of times with no improvement, stop the exercise and look at the problem area in detail.

The one-bar rest between each playing is crucial because it forces the student to actively count.

Finding the pulse

In the copying exercises above, we gave our students the pulse. Now, they have to start finding it for themselves. If they can't recognise a pulse, they're not going to be able to feel it in their own bodies.

Exercises to find pulse

- 1 Play some music (either on an instrument or on a track) and encourage your student to listen for the pulse and count along. Initially you can tell them how many beats in a bar the piece is, until they're confident in identifying that for themselves.
- 2 Play some music and encourage your student to move their body with the pulse. Suggest using their arms and a form of 'conducting' may appear. As they get more confident in moving to the beat, you can suggest using a 'downbeat' on the strong first beat of the bar. You can even develop this to move the beats in the correct way (eg down, left, right, up in 4/4).
- 3 Turn on a metronome and encourage your student to clap and/or count along. The aim is to make the clicks disappear by covering them with a loud clap and/or count.

Repertoire: playing introductions

Playing introductions to a piece are a great way of getting a student to think about pulse before they play. You don't have to be a good pianist to do this: you can just improvise on your own instrument. This can be as simple as using tonics and dominants, showing a strong beat at the beginning of each bar. Get your student to count along as you play.

Subdivision

The ability to internally subdivide is an immensely useful one for musicians. As well as the obvious benefits of playing in time and with solid rhythm, it's also a well-known psychological tool. Many musicians use counting with subdivision to focus the mind, particularly at times where performance pressure could cause it to wander.

I first encountered the game below when attending a workshop on Dalcroze Eurhythmics – a method where music is experienced through whole-body movement. If you haven't already, I would encourage all music teachers to research and experience the teachings and principles of the Dalcroze method (Dalcroze UK is a good starting point: <https://dalcroze.org.uk>).

Walking game

This exercise is performed by your student walking around the room, or on the spot, in response to music. Most teachers will be able to improvise a simple tune to work with this game, and there's an example below.

Start by asking your student to walk along to the beat that you're playing. Start by playing crotchets at around 80bpm, and allow your students to find a comfortable way of walking to the beat.

Then explain that you will occasionally change the note lengths, by doubling or halving them. The student has to adjust the speed of their pace accordingly. As you move to minims and semibreves the steps will get slower and slower. As you move to quavers and semiquavers they will get faster. The tempo of the walk only ever halves or doubles. Here's an example of what you might play:

Andante ♩ = 80

The musical notation shows three staves of music in 4/4 time. The first staff begins with a mezzo-forte (mf) dynamic and contains four measures of music with various note values. The second staff starts with a piano (p) dynamic and contains four measures, including a crescendo (cresc.) section. The third staff starts with a forte (f) dynamic and contains four measures, ending with 'etc.'

Start playing using the same 'andante' crotchets and then move through the different note lengths. After each change, allow your student to find the new pace – don't move too quickly to the next note length.

This allows your student to experience subdivision with their whole body.

Repertoire: playing all subdivisions

The example below shows a passage written out with every quaver articulated:



This is an excellent way of internalising pulse. First, play the passage in the original version. Then play with all subdivisions, and then return to playing it with the original rhythm. Hopefully, the subdivided counting will remain internal as the music is played as written.

Intermittent pulse: moving from external to internal

It isn't enough to ask a student: 'Are you counting in your head?' We have to help them move from an external pulse to an internal one. These games and repertoire exercises will help.

Silent bar game

This game works well with larger ensembles, and encourages students to count silently together. You set up a strong pulse by counting in, and then the students play crotchets for a bar. They then all count a bar's rest internally and silently (no foot tapping allowed!) and, without cue, then play another bar of crotchets. You can increase the rest (up to two bars, then three, then four, etc) as they get more proficient.

Silent beat counting

This game can be done as a reading exercise using a simple numbered notation and just counting certain beats. As you read the rhythm, beats start disappearing and must be counted silently (a dash denotes a silence). You can also add subdivisions.

Examples:

- 1 1, 2, 3, 4 | 1, -, 3, 4 | 1, -, -, 4 | 1, -, -, -
- 2 1+, 2+, 3+, 4+ | 1+, 2+, -, 4+ | -, 2+, -, 4+ | -, -, -, 4+

Those working with very young students might consider doing a similar exercise with a nursery rhyme. This is basically how 'Head, Shoulders, Knees and Toes' works. This song always gets faster when the gaps start appearing, so put on a drum track and see if your students can keep in time.

Repertoire: Once-a-bar metronome

Instead of setting a metronome for each beat, set it for once a bar. Pick a section to play, and repeat this passage with the click on a different beat each time. You can be creative in the way you do this. For example, you could pick four bars of a piece in 4/4 time. Set the metronome to click on the first beat of each bar. Add a silent beat at the end of the last bar (making that bar into a 5/4 bar) and immediately repeat. Then each time you play the passage the click will be on a different beat.

Repertoire: intermittent metronome

Using a metronome with an intermittent setting (ie with missing beats) is an excellent idea. The Time Guru app, for example, allows you to set the percentage of randomly silent beats you want, and also set it to start with all the beats and gradually move to having those beats missing.

Generating habits

Musicians need their internal metronome to be constantly on when playing or resting. Your students need to generate a habit so that it's always there when they need it. Use every opportunity to encourage them to switch it on.

- ▶ **Counting in:** make sure your students never start playing without a clear pulse in their head.
- ▶ **Scales and exercises:** here is an excellent opportunity to get their internal metronomes working. Make sure your students always have a clear pulse before they start.
- ▶ **Long notes:** occasionally, you may want to play the longest note possible (unless you're a pianist), but playing long notes over a count (say eight beats) can be a much more useful exercise.
- ▶ **Duets:** play duets with your students. Observe how they react when the rhythm in the two parts diverge. If they can't cope, they're relying on you for a pulse and are not confident enough in their own.
- ▶ **Record your students:** many young musicians are in denial that they have a problem with pulse. Record them and then get them to count, clap or use movement as their recording plays. It can be illuminating for them. Let them find out that they actually need help with pulse, and work with them to improve this crucial area of music making.