# Guitar Technique

# **Table of Contents**

| GENERAL INTRODUCTION                     | 3  |
|--|----|
| ANATOMY OF THE GUITAR                    |    |
| TUNING                                   |    |
| TUNING WITH THE DIGITAL TUNER            | 4  |
| TRADITIONAL TUNING                       | 4  |
| STANDARD TUNING IN FOURTH INTERVALS*)    | 5  |
| ADVANCED TUNING WITH NATURAL HARMONICS*) | 6  |
| GENERAL FINE TUNING                      | 6  |
| FINE-TUNING WITH CHORDS                  | 6  |
| THE HUMAN INSTRUMENT                     | 7  |
| ERGONOMIC PLAYING                        |    |
| PSYCHOLOGY                               |    |
| PHYSIOLOGY                               |    |
| PRACTICING ADVICE                        |    |
| PLAYING WITH YOUR HANDS                  | 15 |
| LEFT HAND TECHNIQUE                      | 15 |
| SLIDE GUITAR                             |    |
| RIGHT HAND TECHNIQUE                     | 18 |
| COORDINATION OF BOTH HANDS               |    |
| DEVELOPING SPEED                         | 27 |
| ARTICULATION                             | 29 |
| LEGATO AND STACCATO                      | 20 |
| HAMMER ON / PULL-OFF                     |    |
| SLIDE                                    |    |
| VIBRATO                                  |    |
| BENDS / UNISON BEND                      |    |
| ORNAMENTATION                            |    |
| DYNAMICS                                 |    |
| TIMBRE                                   | 39 |
| INDEX CHOICE OF GUITAR TECHNIQUE         | 40 |

All Aspects of ROCK & JAZZ Volume 3 – The Electric Guitar

Guitar Technique 2 of 7 Documents ISBN 87-88619-68-0 1st Edition, 1st Issue Summer 2000 Produced in Denmark



Digital Books™ is a trademark of NORDISC Music & Text, DK-2700 Broenshoej, Denmark

WEB http://home7.inet.tele.dk/nordisc

Email nordisc@post7.tele.dk

Text, notes and musical examples: © Copyright Sebastian Kalamajski 2000

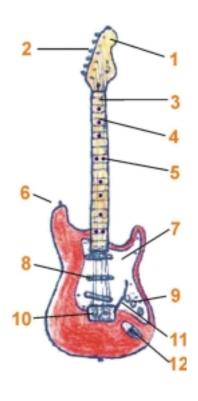
Editor, Illustrations, layout and concept, additional text Orchestra arrangements, rock musical examples: © Copyright H.W. Gade 1981-84/2000

All rights reserved. Copying or reproduction in full/in extension not allowed. No public hire of the material allowed without the written permission of the publishing house.

# **General Introduction**

All electric guitars, whatever they may look like, have one thing in common – the pickup. This device is allowing us guitarists to get more volume out of our instrument by "picking up" vibrations from the string, transform them to electric current and send it to the amplifier. Besides the pickup, a typical electric guitar, in this case a Fender Telecaster could have the following parts.

#### **ANATOMY OF THE GUITAR**



- 1 Head
- 2 Tuning pegs
- 3 Neck\*)
- 4 Frets\*)
- 5 Position marks
- 6 Knob for strap (the other knob is placed at the bottom of the guitar)
- 7 Fingerplate
- 8 Pickup
- 9 Controls for volume etc.
- 10 Chair with fastening clamps for strings and fine-tuning screws
- 11 Vibrato arm
- 12 Outlet for chord to amplifier

<sup>\*)</sup> When guitarists say that they go "up the neck", it means that the fretting hand moves towards the guitar body, and the pitch goes up; "down the neck" means going towards the head and that the pitch goes down.

#### **TUNING**

You tune your guitar by using tuning pegs and your ears (or an electric tuner). The standard tuning of a guitar is.

Fig. 1 Guitar String Gauges

E 1<sup>st</sup> string
B\* 2<sup>nd</sup> string
G 3<sup>rd</sup> string
D 4<sup>th</sup> string
A 5<sup>th</sup> string
E 6<sup>th</sup> string

\*) The B string is called H in Germany and the Scandinavian countries, see All Aspects of ROCK & JAZZ 1/ Music Theory

Remember that we count the strings from bottom to top (from the thinnest to the thickest string), so the thinnest string is the  $\mathbf{E}$  1<sup>st</sup> string, and the thickest string is the  $\mathbf{E}$  6<sup>th</sup> string. The easiest way to tune the strings – but not always the best - is to use a digital tuner.

#### **TUNING WITH THE DIGITAL TUNER**

Set the switch to the deep  $\mathbf{E}$ . Keep picking the  $\mathbf{E}$  6<sup>th</sup> string while turning the tuning peg until the tuning graph / arrow stops moving. Set the switch to the next note ( $\mathbf{A}$ ) and repeat the process with the  $\mathbf{A}$ ,  $\mathbf{D}$ ,  $\mathbf{G}$ ,  $\mathbf{B}$  and high  $\mathbf{E}$  strings.

#### TRADITIONAL TUNING

If you do not have or do not want to use a digital tuner, you must learn to use your ears to tune your instrument. If you are completely new to music you will find it difficult at the beginning, but as time goes by you will get better at it. Let us look at four different ways to tune guitar. Choose the one you like or use them all for best tuning results. Before you start tuning, tune your **E** 6<sup>th</sup> string to the low E. You can use a piano or keyboard to "catch" the pitch of the note.

Fig. 2 Tuning the Guitar Strings after the Piano



**Tuning Fork** You may alternatively use a "tuning fork", but as the tuning fork is tuned in A, you must start with tuning the  $\mathbb{A}$  5<sup>th</sup> string instead of the  $\mathbb{E}$  6<sup>th</sup> string. In this case, start tuning the  $\mathbb{D}$  4<sup>th</sup> string etc. and finish by tuning the  $\mathbb{E}$  6<sup>th</sup> string. Historical note: Before the arrival of digital tuners, it was most common to start tuning the  $\mathbb{A}$  5<sup>th</sup> string.

#### STANDARD TUNING IN FOURTH INTERVALS\*)

- A Pick the deep **E** 6<sup>th</sup> string with your left-hand finger on the 5<sup>th</sup> fret (the **A** note), and pick the open **A** 5<sup>th</sup> string shortly after. Keep picking both the **E** 6<sup>th</sup> string and **A** 5<sup>th</sup> string while adjusting the **E** 6<sup>th</sup> string with its tuning peg until you can hear that the two pitches sound exactly the same.
- Pick the A 5<sup>th</sup> string on the 5<sup>th</sup> fret (the **D** note) and tune the open **D** 4<sup>th</sup> string with its tuning peg while you keep picking both the A 5<sup>th</sup> string and the **D** 4<sup>th</sup> string until the two pitches are in tune with each other.
- G Pick the D 4<sup>th</sup> string on the 5<sup>th</sup> fret (the G note) and tune the open G 3<sup>rd</sup> string with its tuning peg while you keep picking both the D 4<sup>th</sup> string and the G 3<sup>rd</sup> string until the two pitches are in tune with each other.
- B Pick the G 3<sup>rd</sup> string on the 4<sup>th</sup> fret (the B note) and tune the open B 2<sup>nd</sup> string with its tuning peg while you keep picking both the G 3<sup>rd</sup> string and the B 2<sup>nd</sup> string until the two pitches are in tune with each other. *Please note* that the interval between the G 3<sup>rd</sup> string and the B 2<sup>nd</sup> string is a major third, not a fourth!
- Pick the B 2<sup>nd</sup> string on the 5<sup>th</sup> fret (the E note) and tune the open E 1<sup>st</sup> string with its tuning peg while you keep picking both the B 2<sup>nd</sup> string and the E 1<sup>st</sup> string until the two pitches are in tune with each other. Now **fine tune** the **deep** E 6<sup>th</sup> string with the **high** E 1<sup>st</sup> string to make sure that the tuning has not moved away from the original E. This is often the case because the new strings easily get out of tune while tuning the next strings (!). Strum all the strings and listen if it sounds OK.
- \*) See All Aspects of ROCK & JAZZ 1/ Music Theory, chapters Scales and Harmony

#### **ADVANCED TUNING WITH NATURAL HARMONICS\*)**

- A Play a natural harmonic by lightly touching the deep **E** 6<sup>th</sup> string with a left-hand finger precisely above the 5<sup>th</sup> fret (without pressing the string!), and do the same on the 7<sup>th</sup> fret on the **A** 5<sup>th</sup> string. Adjust the tuning peg for the **E** 6<sup>th</sup> string until you hear the same pitches without any "waving" effect (the note trembles due to interferences between two notes out of tune When the notes are in tune, the wavering stops and they become one note).
- D Repeat the procedure with a natural harmonic on the A 5<sup>th</sup> string's 5<sup>th</sup> fret and a natural harmonic on the D 4<sup>th</sup> string's 7<sup>th</sup> fret. Adjust the tuning peg for the D 4<sup>th</sup> string until the notes become one without any wavering.
- G Repeat the procedure with a natural harmonic on the D 4<sup>th</sup> string's 5<sup>th</sup> fret and a natural harmonic on the G 3<sup>rd</sup> string's 7<sup>th</sup> fret. Adjust the tuning peg for the G 3<sup>rd</sup> string until the notes become one without any wavering.
- As the interval between the **G** 3<sup>rd</sup> string and **B** 2<sup>nd</sup> string is difficult to produce on the thin **G** 3<sup>rd</sup> string you should use the *Interval tuning* here. Pick the **G** 3<sup>rd</sup> string on the <u>4<sup>th</sup></u> fret (the **B** note) and tune the open **B** 2nd string with its tuning peg, while you keep picking both the **G** 3<sup>rd</sup> string and the **B** 2<sup>nd</sup> string until the two pitches are in tune with each other. When you learn to use all the natural harmonics, you may want to use the 4<sup>th</sup> fret on the **G** 3<sup>rd</sup> string (the note **B** two octaves up) to tune the **B** 2<sup>nd</sup> string.
- Use the natural harmonics tuning again with a natural harmonic on the B 2<sup>nd</sup> string's 5<sup>th</sup> fret and a natural harmonic on the E 1<sup>st</sup> string's 7<sup>th</sup> fret. Adjust the tuning peg for the E 1<sup>st</sup> string until the notes become one without any wavering.
- \*) See All Aspects of ROCK & JAZZ 1/ Music Theory, chapters Scales and Harmony

#### **GENERAL FINE TUNING**

When you have tuned your guitar using the above methods, it may still sound a little out of tune. What you can do is use the octave fingerings (see rhythm guitar section) for every possible string pair and fine-tune the strings, so the two pitches (the root tone and the higher octave) are in tune. The instrument may be hard to tune if the strings are relatively new as the strings tend to "loosen up" and lower the pitches. In this case you'll just have to tune your guitar very often, and maybe stretch the strings by pulling them up, away from the fret board, several times, directly after you have put them on the guitar and tried to tune it.

#### **FINE-TUNING WITH CHORDS**

Having tuned all the strings, prepare yourself for a chock: The guitar is not in tune yet! Most guitar frets are placed a little imprecisely so to ensure that the guitar is ready for the next song, check the chords on the "tuned" guitar. If you are going to play with "loose string" chords (open chords), you should try a G-chord, a D-chord, an E-chord and an A-chord. Likewise, if you play with chords on the 5<sup>th</sup> fret or higher, you need to check these chords and fine-tune the strings accordingly. Normally it is almost impossible to achieve a tuning that fits both open chord and chords placed on the higher frets.

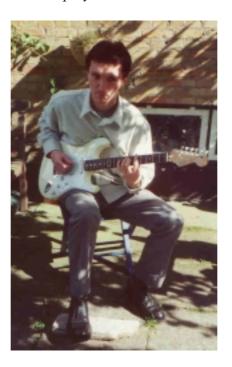
# The Human Instrument

#### **ERGONOMIC PLAYING**

Ergonomic playing is letting your body relax as much as possible and avoid getting hurt. Generally, when you hold the guitar you should hold it in such way that you feel as little strain in your body as possible. So simple is it! If you feel insecure how to do it right, read on and find out more!

**How to sit down with the Guitar** This is really a matter of personal taste, but the main rule for sitting properly with your instrument is, as mentioned before, not to feel any strain or pain in your body. Personally, I recommend sitting down with both your feet on the floor, and placing the guitar on the right leg (or the left leg – if you are left-handed). Your back should not be crooked, but you may still slightly bend your upper part of the body using your lower back, if you need to see what you are playing. Be careful not to bend your neck, as it may cause you many painful experiences. How to hold your guitar with your left hand is discussed in the left-hand technique section in this chapter.

Fig. 3 The author sits down, relaxes - and plays!



**How to stand up with the Guitar** When you stand up, your left hand seems to have a limited range of movement. It is caused by a more bended wrist, which creates a more partial contraction in arm and finger muscles, in contrast with less contraction when you are sitting down. To minimize this effect, you need to experiment with adjusting your guitar strap till you come to the point where you hold your guitar with just a little bending in the wrist – it should help you a lot. You will get more used to this position if you practice playing guitar this way. You do not have to stand up throughout the whole practice routine, just a smaller amount of time should do.

#### **PSYCHOLOGY**



**A Visit inside your Brain** First of all, it will be useful to learn some of the basic functions of your mind; it will give you a better understanding of the psychological aspect of guitar playing.

The classic division of mind is:

The Conscious Mind being responsible for observing and analysing your environment. The Unconscious (Subconscious) mind storing the information you are absorbing, this is your memory bank.

**The Supraconscious mind**: your intuition, tendencies; stays apart from the ordinary flow of thoughts.

Consciousness is something you can learn to control better than you are doing now. By doing this you will get more out of your practice time, you will learn everything faster than before, and the improvement in your guitar playing will be more remarkable in less time. This will also affect other parts of your life, e.g. improving your reading ability, learning new languages and your typing speed on the computer!

The other two mind functions – *unconsciousness* and *supraconsciousness* – are always activated, no matter what you are doing. You can, however, get a better use of your memory bank – *unconsciousness* – by gaining a better control of your conscious mind. Simply: your memory of scales, chords, or whatever you are learning will improve, and learning new music pieces on guitar will take you less time than ever before. Here is how it works:

**Concentration** When you are trying to learn something, get used to being focused on what your hands are doing. Do not get distracted by other events, because your consciousness gets unorganised and you simply waste your practice time. The following factors can strengthen your attention on practicing guitar:

Before practicing: *make a sketch of what you are going to practice* – and follow it! Write down how much time you want to spend on different topics, plus: do not forget to take 5 minutes rests every 25-40 minutes.

By focusing on your playing, many nerve impulses going to your brain will be unleashed due to event of practicing. Your brain will not have to deal with lots of different impulses, caused by any distractions (like sneaking on TV), and you will simply learn faster.

It is easier to stay focused easier if *you are motivated*! Unfortunately, many students are motivated only if they know they will get rewarded for their work, or when there is a fear-of-loss factor lurking at the corner. You should, however, try to get inspired every time you

practice. How? For example, listen to your favourite guitarist and think how lovely it will be playing like he/she does; think about how great it will be when you are the one walking the stage in front of an audience that loves your playing; think of the great future life when you are the one that plays guitar like no one else etc. Try to invent your own inspiration-giving techniques, write them down, and use them when you happen to get uninspired. If none of these techniques works, the one thing that can help is simply picking up the instrument and starting to play! Remember though, this technique will not work if you will not give it a try!

**Second Nature Playing** If you ever tried to learn a classical guitar piece, you probably know how time-consuming it may be. The same also applies for learning a scale throughout the fretboard, and many other aspects of guitar playing. This section is about learning something until it becomes, as I call it, automatic – it means, being able to play something without thinking about where to place your fingers on the fretboard, how to move your hands, etc. You will soon get equipped with techniques that will shorten the time you usually spend when you want to learn something. Use these techniques along with the others presented above and in previous sections.

When you successfully learn something, and you can play it up without thinking so much what your fingers are doing, a new aspect of music will automatically open for you: *the interpretation*. Playing something right is one thing, but playing it so it sounds nice is an art, which requires your full concentration. And that can only be done when you have learned to play something technically perfect and can also play it second nature.

You will know when you can play a piece this way when you do not have to use your consciousness to think where your hands shall move, where your fingers shall go etc. Your unconscious mind is doing the entire job! What happens in your body when you play it this way?

As already mentioned: you do not have to concentrate on what you play, it just happens. However, during the learning stage your concentration must be fully focused on what your hands and fingers are doing – this will speed up the process of learning something *second nature*. Sometimes it can be hard to do this, especially when you are almost finished with learning a piece of music, and your fingers have a tendency to loose your attention – your consciousness begins to "think" about something else. Beware when that happens, stay focused on your playing all the time throughout the whole learning process! Do not let your mind wander even when you are almost, but yet not completely, comfortable with the piece you try to learn.

Your finger muscles are getting more used to all the movements that are necessary to play the music piece. They are also getting used to all the energy losses that happens when you play guitar. When you learn something second nature, you are often able to play it faster and more precise than you did before. At this stage you have got something that people call musclememory, although it is not only muscles that are doing the job. Because all your finger movements becomes automatic, you probably have discovered how important it is to learn something **right** from the very beginning: placing the fingers in right positions, playing relaxed, avoiding dampening strings that should not be damped, and many, many other factors. If you do not pay attention, and learn something the wrong way, it will become a habit, which will be

hard to get rid of. So, remember: before you start to learn something on your guitar, take your time and go through all the technical problems you might have when playing the piece; write down how you shall play different parts of the composition, what fingerings you shall use etc. It is very important!!!

**Repetition** is the main technique you will use when trying to learn something new. Your inner body gets adapted to what you are doing and, as time goes by, the difficulty of playing the composition will pass away.

**Motivation** This is a hard, if possible at all, task to teach. Nevertheless, some advice can be given to you. How can one stay motivated all the time? One way that really works nice for many successful students is a conscious search for the evidences that shows the progress created by continuous practicing. As you work on your guitar technique you notice that slowly but surely you simply play better and better. By regular focus on the progress – the evidence of development as a guitarist – you automatically stay motivated to continue practicing over and over. A good way to start using this simple and effective inspiration-giving technique is to write down what you expect to notice in your progress as you practice a particular aspect of guitar playing. Let us clarify this with an example: assume that one day I start working on major scale shapes and want to learn them all over the entire fretboard. Now, what advances do I expect from learning this material? Maybe it will be easier for me to create my own solos, and gain a better understanding of the guitar neck. Now I know what I can look forward to, once I learn all the major scale shapes. Some day, after a couple of hard practicing weeks I realize that I actually can create my own solos with more ease and I have gained a better understanding of the fretboard. Did I possess these abilities before? No! Do I have it now? Yes!!! I found out that my practice showed results; I found the evidence for my progress! I am so #%&%# glad, and this feeling of happiness heightens my motivation so I cannot wait till I start practicing again – this time on some other aspect of music.

Before you start to use this technique make sure that you never set any unrealistic expectations to yourself! Something like "I have never played guitar before but I will start to develop my speed now, and I am expecting to become another Yngwie Malmsteen in two weeks" is really a very optimistic goal. Instead, try to not make any "deadlines" for your progress, and divide your long-term goals into smaller, short-term goals you can work on. This should really keep you motivated, as you notice how you continuously progress from one level to another.

**Habits** Practicing should be preferably developed into a habit to ensure your path of musical progress. Creating a new time-consuming habit often means that you must forget about other events you normally would spend time on. If you like to sit for hours and click through every single channel on your TV instead of working on your guitar technique... well, you will not get far, so simple is it! Throw out the TV through the window, and develop the habit of practicing your guitar instead. Look at all activities that normally "stops" you from playing your guitar and see if it is possible to substitute some, or all, of these activities with diligent practicing time. However, do not just forget about your family, friends and other people!!! Live your social life too!!!

**More about Memory** Memory is often defined differently by various groups of scientists. Most of these believe that memory has its place in the brain, while others mean that it is situated somewhere outside the brain. Some believe that if you forget something "for good" you

will not be able to recall it again, but there are people who can let you discover your "long-forgotten" memories from your childhood by using hypnosis. Discussion about how memory really works and where it is situated is not over yet. This section is not about teaching you what is wrong or right, if you want to dig deeper into the subject, there are many books you can get your hands on and study. What is presented here, are just some more thoughts about using memory for improving your guitar playing faster, by using only PROVEN techniques that have already worked for many students.

Learning something new can be often made easier by associating it to something you already know. A new chord form, for example, may look similar to some other chord form you know; it will be easier to remember it by associating it to the chord you know before-hand. As you play this new chord form for some time, it becomes second nature, and you never have to associate it to something else anymore. Your learning rate has improved, and you may go on and learn new material.

Playing something you already know involves using your unconsciousness. If you can play it second nature, but start to think about what you are playing (by using your consciousness) you may experience some doubt about where or how your fingers shall move. On the other hand, when you do not think what you are playing at all, your playing is becoming mechanical and "cold". What you must do when performing something is to create a balance between controlling your playing and letting your fingers play by themselves. It is not good to think what your fingers are doing and where to move them, but if you want to be a good performer you must think *how* you play the music. Listen to how you sound: if you play a nice classical guitar piece, play it beautifully, if you play acid jazz solo, play it "acid", playing a distorted rock riff requires a "cool" sound, and so on. Create the feeling that the particular music style needs.

Your memory can be strengthened by several other factors, along with those mentioned in the previous sections. It is easy to remember a composition that makes sense to you and is not complicated. However, if you want to learn some advanced aspects of music, you will get face-to-face with stuff that requires lots of study time. Keep that in mind, and do not get discouraged when learning that a difficult jazz scale takes more time than learning a pentatonic scale (just an example). It is just the nature of your body that causes this difficulty phenomenon, and you cannot beat Mother Nature. Other factors that will help you are repetitions, motivation, hard study periods varied with rests and, if you are young, your age. (By the way, you can try to use all the techniques mentioned in the psychology section in your other activities, for example studying in school!)

#### **PHYSIOLOGY**

**Rests** Playing the guitar is possible due to contractions in your finger muscles. These contractions demand that your muscle cells are sufficiently equipped with the necessary fuel. This fuel comes with blood, which, in case you have played intensively for some period of time, cannot reach the muscles to a sufficient degree. When lots of muscle contractions occur, more fuel burns, and if there is no blood with enough oxygen to burn this fuel, a substance called lactic acid is created. Lactic acid makes your muscle feel tired and makes your playing more painful. When this happens you should stop for a while and let the fresh blood run into the muscles and transport the lactic acid away

Becoming a great musician requires not only working on your technique, but also studying music theory, composition etc. A good practice schedule idea is to practice guitar playing for an hour or two, and then rest your finger muscles, and go over to studying books instead. After that you may take a longer rest from all music study, and then begin to practice your guitar playing once again (if you have enough time, of course). Your muscles should be refreshed at that time and it will feel good to begin to pick up the instrument once more.

**Breathing** Another topic that needs some discussion is your breathing technique. Many students have a tendency to hold their breath when some difficult passage must be played. You see, you should never do that! Your breathing should be regular and natural, without any unusual stops and breaks. When you hold your breath your muscles gets more strained and more tensioned, and that will actually harm rather than help your playing. So, take control of your breathing!

**Solving Technical Problems** Another tendency, evident for many students, is the inability to solve technical problems efficiently. Often, you try to get rid of a technical problem by repeating the same passage of notes over and over until it is nailed. It may actually work, but the negative side effect is that it takes a great amount of time. Beside that, the practiced passage may be learned the wrong way, unnatural for a human body. You can avoid this habit by always analysing the problem you might have. Look for a reason why you are not able to make this particular finger movement, and see what you can do about it. Often, a simple change of fingering might help, but there can even be other factors, for example how you hold your hand or pick the strings. Always do a good analysis of what you are about to play, and how you can play it the most easier and natural way.

**Results?** Thanks to your hard practice, the muscles that are responsible for controlling your fingers are getting stronger, coordination between your brain and muscles is improving, and more substances involved in burning muscle fuel during your workout are created. Your finger movements are getting more and more precise and perfect, which in turn leads to more economical fuel use and therefore a better condition of your muscles.

#### PRACTICING ADVICE

**Study Plan** The first step you should do before you practice is to organize and write down a practice schedule showing what and for how long you will practice a particular aspect of music. When you do it look at the topics you would like to learn first and decide if it will be easier to learn something step by step or if it will be better to learn everything at once. Often, it is a good idea to break down a particular aspect of music into small parts, and practice each part of that topic individually. For example, if you want to learn the melodic minor scale on the entire fretboard, it would be better if you practice playing the scale in one position first, and then move on and learn the next scale shape in next position, and so on. Sometimes though, it is easier to learn everything at once, for example an easy melody.

**Warm-up!** Before you start an intensive practice period, make sure that your finger muscles are sufficiently filled with blood – do a warm-up! A warm-up exercise can be created by yourself just make sure that it is not a finger-flutter exercise! Instead, play a scale or arpeggio at a slow speed, and do it for a couple of minutes. After that - begin your practicing routine.



**Once again, take Rests!** Do not forget to take rests during your practicing time. A five minute rest every 25-40 minutes will let your muscles and brain recover from the intensive learning period (I assume that you practice with full concentration and engagement, as mentioned before). Believe it or not, but taking rests will speed up your learning rate, and you will give your brain a well deserved time-out during which it is going to digest all the information it was given when you practiced intensively. Shorter rests can also be taken when you practice a very physically related material and your finger muscles gets tired so you cannot move them anymore. These rests should be incorporated within the ordinary practicing time period, but, of course, they should not last longer than approximately one minute.

**Variations are More Fun** To make your practice time more interesting and fun, you can try to practice various aspects of guitar playing in a row. For example, diminished scale for a half an hour, followed by chord exercises, followed by technique development, all finished off by improvisation. This kind of practice schedule will be more exciting to accomplish than practicing just one scale for two hours in row. In the first section of this book, *Read This First*, you will find suggestions on how to use this book in progressive and efficient way.

**Have Patience!** During your guitar practicing periods, you may experience that you are getting nowhere with something you practiced for a long period of time. Do not get discouraged when that happens, because this phenomenon is not remarkable at all. We all sometimes

experience some kind of stagnation in our playing. How frustrating it may be, there is not so much we can do about it, apart from keeping up with practicing and wait for the breakthrough to come, because it will come one day! You just have to be patient enough and do not worry about it too much. You can also take a break from your playing for a day or even longer. During this break your motivation should rise high enough to get you back to your guitar again. Another thing you can do is changing the old practice schedule and get involved in something new. This will refresh your mind and you will have more fun while practicing.

When You are about to Learn Something Completely New Practicing a new aspect of music should be done with a step-by-step method: begin by taking a good look at what you are about to learn. Try to foresee what may cause you trouble and what you should spend more time on. Especially, when you learn some new techniques of playing, or a new solo, there is almost always just one single small passage of notes and/or finger movement that makes the whole technique difficult. Instead of practicing the whole line of notes, practice only that little passage that causes you trouble – this way your practicing time will be far more efficient.

Try to associate the new material to something you already know to accelerate your learning rate. When you do this, your brain will digest all information much faster and easier since it attaches the new information to other familiar things.

# Playing with your hands

#### **LEFT HAND TECHNIQUE**

Before we do anything, let me make a clear statement: It is important to learn proper left and right hand technique before trying to develop speed and more advanced fingering techniques. It is crucial for your further development as a guitarist that you have a good knowledge of how to hold and play your guitar the easiest and most efficient way possible. If you learn it the wrong way, it will be hard to get rid of the bad habit afterwards, so make sure you pay a great attention to how your hands are working when you practice, and let the proper hand technique sink in till the day you use it without thinking about it.

Here are the points you should think about when using your fretting left hand.

- 1 Hold the guitar neck as if you were holding a book: place the thumb in the middle of the back of the neck, and straighten out your other fingers across the fretboard.
- 2 Make sure your wrist is not bended too much. If it is you will greatly limit your playing ability.
- Place your fingers on one fret each, on the E 6<sup>th</sup> string. For example index finger 1<sup>st</sup> fret, long finger 2<sup>nd</sup> fret, ring finger 3<sup>rd</sup> fret and little finger 4<sup>th</sup> fret. Make sure the fingertips and not any other part of you touch the strings. Also, place each finger just behind the right fret (closer to the guitar body). Press down the strings with just enough force to make them touch the fretboard and sound clean; do not press too hard!
- 4 The palm of your hand should have no contact with the neck. Leave a little space between the hand and the fretboards. JAZZ Do not damp the strings with your fingers. ROCK Damping is allowed.

Well, this is it! The Main Idea here is to play naturally and not strain the hand. Of course, there are some exceptions for this rule, when other "special" techniques are involved, but for now you should concentrate on relaxed playing, which you will do if you follow the rules listed above.

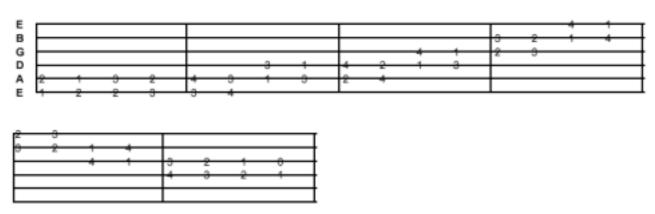
Just some few more words about your thumb: as listed in point 1. You should hold your thumb behind the neck of the guitar, but for some techniques, e.g. bends or slides (see the Articulation section), it might feel better to hold it over the neck instead. Many guitarists feel they get a better control of these techniques when they use their thumb this way. Try both thumb positions and see which of these suits you better when you are bending strings or use the sliding technique. Personally, I do not use thumb-over-neck-position as it slows down my playing, due to the need of switching thumb positions. If you play slower solos however, you might feel better using this thumb positioning anyway.

There is also something to say about your little finger (pinkie). Generally most peoples pinkies are much weaker than other fingers, and some of the guitarists never use this finger just because of that. You should, however, if you not already do it, develop its strength and use it all the time! It is very helpful when playing scales, chords, solos and many, many other things. Even if it feels hopeless to play with your pinkie in the beginning, you will gain more control and power with the finger as you use it. Just have patience with it!

Here is an exercise for the left hand technique development. Be sure to use all the rules stated above when you perform it! Do not care about the right hand here, just move the left hand fingers from one fret(s) to the next as written. At first, do it slowly. Have fun!

Fig. 4
Left Hand Exercise

### **Tablature**



#### 2lefthand.PDF

**Tablature Formats** To show the reader different versions of the TAB notation system, we have chosen to use both a very simple TAB system without noteheads and a sophisticated system with noteheads, slurs etc. The system type depends on the complexity of the music.

**ZOOM FUNCTION** To zoom in on the notes and TABs, which often appear blurred on the screen, click the hyperlink of the notes or TAB to see the illustration in max resolution. When you need to print the notes/TABs, always print the ZOOM view for best results.

**Stretching Fingers** By developing a good finger stretching ability in your left hand you will be able to play more advanced chords and solo techniques. The trick here is not hurry with it, because the tendons in your hand are definitely harder to stretch than muscles, and so it takes a great deal of time to adapt them to longer finger stretches than before. You must also be careful not overdoing the stretching exercises otherwise you will hurt yourself! Do one set of the exercise presented below every day, and that will be enough!

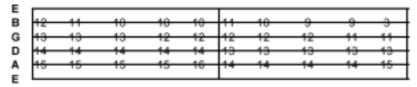
Fig. 5
Stretching Exercise

#### **Notes**



#### 2stretch.pdf

#### **Tablature**



2stretch-tab.PDF

#### **SLIDE GUITAR**

A very special technique developed in the 1920'ies classic blues styles uses a bottleneck or a steel tube on your left hand 1<sup>st</sup> finger. Slide guitar can be played with the steel tube only or in combination with the other fingers on the left hand. The guitar is often tuned to a chord. A fine example of a slide guitar genius is Johnny Winter, who has produced the most stunning solos, partly with standard tunings, partly tuning the guitar to, for example, an E or A chord. An example of slide guitar playing can be found in *Chapter 6, Exercises, Rock exercise No 5*.

#### **RIGHT HAND TECHNIQUE**

Your right hand is responsible for picking the strings with the plectrum or the fingers and thus makes the strings vibrate and create sound waves. In this section, you will learn how to use your right hand the natural way and picking techniques enabling you to progress faster as a guitarist. There are also a few words about string dampening – one aspect of guitar playing often neglected by novice guitarists, reducing their ability to play clean and clear.

**Pick (Plectrum)** What kind of pick should you use? Although the choice is free for everyone, most professional guitarists use a pick that is stiff, hard, and easy to hold. That kind of plectrum will give you a better control over the strings. The pick should not be too large because it will move itself up and down in your hand all the time you play, and it will cause less control over your playing.



Fig. 6 Picking Technique

You hold the pick between your thumb and index finger. The edge of the pick should be held parallel to the strings. Hold the pick slightly angled with respect to the strings, so you not just play using the flat side of the pick but use its edge instead. Make sure that you do not hold the pick too hard or too loose – hold it by your fingers with medium strength; and remember not to hold it too close to the edges, but rather in the midpoint – otherwise your playing will get more uncontrolled and eventually it will be hard to play faster.

**Right Hand Finger Position** Holding the right hand fingers straight or bent is also a matter of taste for many of us. There are many great guitar players and each of them uses his/her own right hand position. However, the style used and recommended by many pros is to bend your fingers inside your hand so your fingertips almost touch the palm of the hand. Benefits gained from this style are following: it allows you to pluck the strings with your fingers (which is good when you want to play a bass line with your pick and chords with your fingers), and it gives your hand a free range of movement over the strings. This style is also the one recommended in this book.

#### **Picking The Strings** There are different ways to pick the strings:

- 1 *Circular movement of your thumb and index finger.* You can do it by rotating the pick using only these two fingers. Your wrist and forearm should be almost completely straight.
- 2 Picking from the wrist. You move your hand up and down by bending your wrist.
- 3 Picking by using the forearm muscles This technique is often used for playing fast lines. You should feel that your forearm muscles are contracted, and your arm is kind of "shaking". Your fingers and wrist is held straight.
- 4 Picking from the elbow You can use this technique when you play chords, especially in open positions (more about that in the Rhythm Guitar section). Your wrist is held straight, and your hand does not touch the guitar body. Move your forearm up and down pivoting from the elbow.

Many guitar players are using different picking techniques for playing fast lines. The one recommended in this book is a combination of techniques 2 and 3. You may nevertheless want to experiment with other techniques as well. I saw the circular picking technique in action when Eric Johnson played some fast stuff on his guitar. Other pros use their forearm muscles to shred. The choice is absolutely personal, and the choice is thus up to you. No matter what technique you might choose to play fast, please notice that picking from the elbow will not work so well, but it is good to have it nailed when you need to strum through some open chords sometimes.

**Dampening Strings** When you play your guitar you do not want to hear a bunch of unnecessary and unwanted tones ringing through the music. Therefore, you must learn to damp the strings you do not use. There are two possibilities of dampening strings, either with your right or left hand. Although this section is about right hand technique only, let us make an exception and talk about both hands possible action when the strings shall be damped.

Damping a string (or several strings) with the palm of your right hand should in my opinion be done only when you switch from picking the higher (thinner) to a lower (thicker) string. What you should do here is to simply bend your hand a little in the wrist, so the palm of the hand comes in contact with the string/strings you want to damp. By doing it you will mute the string you do not want to hear, and get rid of all unwanted noises. This technique should be practiced each time you play something – by thinking about damping the strings whenever you practice, you will learn the muting technique very fast. You can even practice this little exercise for faster results:

Fig. 7
Dampening Strings, Example 1

# **Notes**



#### 2damp 1.pdf

#### **Tablature**



### 2damp 2 tab.PDF

As mentioned above, you may also use your left hand to damp the strings you do not want to ring out. This muting technique can be used when you move your pick from lower (thicker) to higher (thinner) strings, or even the other way (upwards). The idea here is to use one or more of your left hand fingers to touch the string/strings that should be muted. An exception with this muting technique is when you play on the higher strings, and cannot use your left hand fingers to mute the bass strings. In this case you should use your right hand palm for muting the unwanted noises. One more time: the fast way to learn this damping technique is to incorporate it in everything you play or practice. You can practice this exercise too, if you feel you need it:

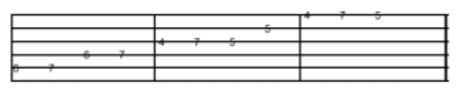
Fig. 8
Dampening Strings Example 2

#### **Notes**



# **Tablature**





2damp 2 tab.PDF

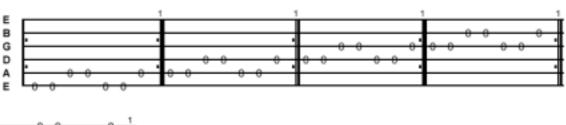
Alternate Picking Learning alternate picking is recommendable. This picking technique can be used in almost any kind of guitar playing. If you get it nailed you will be able to play "anything" you want, without any need to "work-out" some specific solo with metronome. There are people who say that economy picking is a better alternative, but it will surely not allow you to play spontaneous, fast solo lines without working them out beforehand. So, alternate picking is the one you should master! What is alternate picking? It is a simple down and up picking movement in your right hand. No matter what tone you play or what string you shift to, this down and up motion should never be interrupted. It causes most troubles when you must do a shift from one string to another, so it is logical to create an exercise that will help you out of this problem:

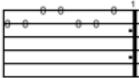
Fig. 9
Alternate Picking

### **Notes**



# **Tablature**





2altpick tab.PDF

**Sweep picking** is used when you literally sweep across the strings. It is mostly used when playing arpeggios with one note on each string, but can even be used for rhythm guitar figures. More about this technique can be found in Lead Guitar section – sweep picking. If you can combine this technique with the alternate picking you will truly be able to play "anything" you want. Practice the following exercise often to learn how to change between these two techniques spontaneously. You may move it in other positions, or apply it to other scale shapes as well.

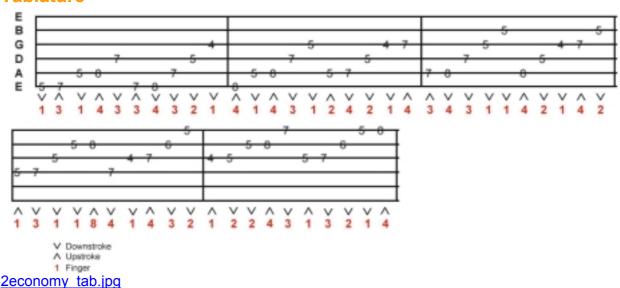
**Economy picking** is playing the notes by picking strings by the shortest (and therefore the most economical) right hand movement possible. It allows you to play fast lines with less spent practice time, but as said before: it is a technique you can use in the licks you have worked out beforehand. If you want to be able to do a spontaneous "economy picking" when you improvise, you must learn to combine the alternate and the sweep picking instead.

Fig. 10 Economy picking

#### **Notes**



#### **Tablature**



**Hybrid technique** is used most for chord-melody playing style. You pick the bass strings with the plectrum, and pluck the other strings with your long, ring and little fingers. It is a very useful playing technique, and it can be used in many ways. See the chord melody section in chapter 4 to see what it can do for your playing.



Fig. 11 Hybrid Picking

**Pick Patterns** What picking pattern should you use when you play in other meters, for example in a 3/4 groove, instead of 4/4? When you have an odd number of notes to pick, it may be hard to decide if you should use a double down- or upstroke, or alternate picking when you switch from the last note in the group to the first note in the next group. Should you do it like in example 1 or 2?

Fig. 12 Pick Patterns



It depends on the circumstances! Alternate picking throughout the whole figure (last example) is the only way to go if you play fast. Your hand will not be capable of making a fast double down stroke, as in the first example (unless you are a genetic miracle). However, the first method works fine at slower speeds, as well as alternate picking. In this case, the choice is up to you. Remember though, whatever method you decide to use, to always know which note is the first note in a group and emphasize it (hit the string little harder than for other notes).

#### **COORDINATION OF BOTH HANDS**

Playing the guitar requires, in most cases, activity in both right and left hand. To make sure that your hands are doing what you want them to do, you must develop the perfect timing between them. You must be able to pick the string with your right hand at the same time you place your let hand finger on the fretboard. Of course, there are exceptions from this rule, but most often your hands must be coordinated, particularly when you want to play fast.

**NOTE** Before you begin to work on any coordination exercise, make sure that you have learned all the other rules about using your left and right hand. These rules are listed in previous sections, and you simply must learn and master them before you start here.

You can actually develop your coordination by working on almost any aspect of guitar playing under the sun, as long as both hands are involved. In this section you will find one example of a useful exercise that you may include in your practice routine. When you practice coordination make sure you follow these suggestions:

Play the exercises with virtually no rests between the notes. Remember that the previous note should be ringing clear until you pick the next one. Do not let any empty spaces come in between two notes.

Your left hand fingers should be lifted only slightly above the strings when you do not use them, or when you just played a note. The less travel route your fingers have, the faster you will play.

*Practice with a metronome!* Start with a speed you feel very comfortable with when performing the exercise. Do not turn up the speed until you have nailed the exercise and can play it clear and without any trouble.

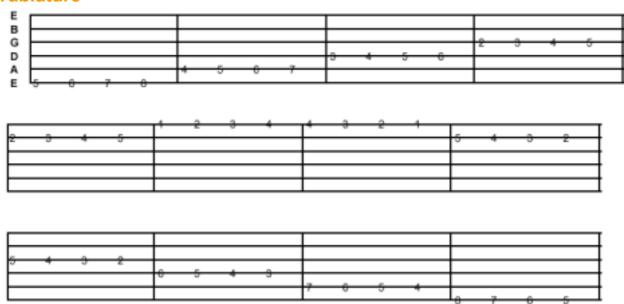
Fig. 13 X
Coordination of Hands

# **Notes**



# 2coord.PDF

# **Tablature**



2coordinate tab.PDF

#### **DEVELOPING SPEED**

If you learned all the techniques and rules listed so far in chapter 2, you are already on your way to developing a good playing speed. Keep in mind though, that you cannot develop fast fingers in a couple of weeks. This process can take you years to accomplish. This is just because your finger muscles and coordination between your brain and hands takes quite a lot of time to develop. You must remember to have patience and continue to practice until you get where you want.

There are few considerations you might think about during your speed development practice:

Do some warm-up exercises for about five minutes before you start ripping off! Your muscles must be warm and filled with enough amounts of blood if you desire the best performance possible.

*Practice with a metronome!* Begin with a slow, very comfortable speed and practice the exercise till you can perform it very clear and without strain. This is very important! Do not turn up the speed of the metronome until you feel very comfortable with the previous speed. If you do, you will soon discover that you have to go back to the slower speed again! And this can feel very frustrating.

Always play with a good coordination in your hands. Do not forget the rules for each hand either!

As you climb up to the higher speeds, you might feel that your wrist gets more locked up and your forearm muscles are working more. Your picking technique is changing, and this is perfect because the impact from the strings gets higher the higher speed you are playing at. It happens because you pick so many notes in so little time, and your forearm muscles gets more and more involved in coping with the intensity coming from the resistance of the strings.

Remember that the higher speed you play at, the less movement your fretting fingers and right hand must do. This is a common problem for guitarists who wants to play fast – fingers and right hand are travelling too long distances in and off from the strings which automatically reduces playing speed. Get rid of this problem if you have it!!! Higher and higher speeds are only possible by lesser and lesser movements of fingers and hands!

What exercises should you use to develop speed? It depends on which playing technique you want to master of course, but practicing the exercises given in this chapter will be very effective. Concentrate on developing your alternate picking technique by performing exercises in this section and also by practicing scales in lead guitar section. It is also good to practice sweep picking with arpeggios (see Lead Guitar chapter), and trying to combine the sweep picking with alternate picking (see exercise in the Right Hand Technique section).

You can also create your own exercises if you want to learn some particular aspect of guitar technique. When you do it, make sure that you cover as many aspects of this technique as possible – look at the most efficient movements of fingers and hands, separate main problems you can have with this technique and practice them; see what possibilities this technique can give you etc.



Have Patience...!

It might have been pointed out several times before, but I must say it again: have patience! It is impossible to develop a great and relaxed guitar technique in "no time". Every finger muscle involved in playing guitar must be strengthened and developed. Even coordination between your both hands, and your brain-hands connection must get more efficient. All these processes take time and you just have to be patient!

# Articulation

Articulation describes *how* you play a specific note. For example you can play a note short, long, or vibrate it. There are several articulation techniques applicable for guitar and the ones presented in this section include:

#### **LEGATO AND STACCATO**

**Legato** (-) means playing notes, one after the other, without any "empty spaces" between them. This technique can be executed on guitar by means of hammer-on's, pull-offs and slide. The basic procedure goes as follows: the first note is (usually) struck by the right hand, but the next ones are created exclusively by the left hand.

**Staccato** (') means playing the note very shortly/abruptly. The note will therefore sound shorter than the actual rhythmic value they are given on the music sheet. If you try to sound the note as shortly as possible, it becomes a **staccatissimo** (') note. You execute these technique by damping the strings either by your left or right hand, immediately after you have picked the string (staccato) or faster than immediately (staccatissimo).

Fig. 14
Legato and Staccato

#### **Notes**



2legstac.PDF

#### **HAMMER ON / PULL-OFF**

**Hammer-on**Allows you to go from a lower to a higher note. You pick the first note with your right hand and follow it by pressing (hammering-on) another left-hand finger on the next fret so the following note will sound. When pressing down the string, be sure not to adapt too much pressure on it; the speed and timing of your finger movement is the main idea here! Hammering on should be done quick, relaxed, and with perfect timing – it is hard at first, but if you practice it diligently you will surely master the move.

**Pull-off** Allows you to go from a higher to a lower note. You place a left-hand finger on one fret and the other finger on another fret *lower* on the neck. Play the first note with the pick, and drag the fretting finger down towards the floor and off of the string, so the next note fretted by the other finger will sound. Pulling off the finger should be done so the string is actually plucked and set in vibration. Be sure to practice this move so both the first and second note sounds equally high!

Here is an exercise that will help you develop both hammer-ons and pull-offs. Try to get all notes ringing equally loud:

Fig. 15 Hammers and Pulls

# **Notes**



2hampull.PDF

#### **SLIDE**

Slide You play a note by fretting a note with a left hand finger and picking it with your right hand. Move/slide your left-hand finger to the next fret on the fretboard. You can go in both directions on the neck. Here comes an exercise for sliding. Be sure to hit all notes accurately!

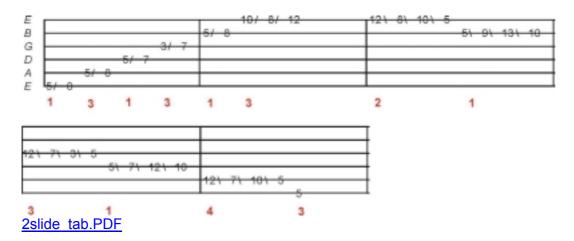
Fig. 16 Slide

# **Notes**



#### 2slide.PDF

# **Tablature**



#### **VIBRATO**

**Vibrato** (vib) This technique can be used in many different ways and the way every guitarist use it is quite personal. Vibrato is giving the note more expression and makes it last longer. It can be produced by the following means:

- Pull the string up and down with your left hand. You can do it in various speeds.
- Slightly move the left-hand finger up and down within the fret. Classical string players often use this technique.
- A combination these two techniques.

If you have a tremolo arm, you can use it to equally vibrate all strings.

Fig. 17 Vibrato

# **Notes**



2vibrato.PDF

#### **BENDS / UNISON BEND**

Bends. When you bend a string with your left hand finger, you can rise the pitch by an interval of a semi-note or a whole note, and sometimes even higher. Usually, guitarists use to bend the string from one note to another belonging to the same key and scale. Generally bending on the thinnest strings requires more strength in your muscles, and you must develop the right feeling in your fingers (and ears!) to bend the strings accurately to the exact pitch. A bend should sound like it is supposed to sound, that is: when you bend a string you should feel how hard you must bend it to go up to desired note. Hear this note in your head and then bend the string to it. It demands quite a lot of work to get this nailed; remember that every string must be bent with different strength even if you want to bend it by the same interval as you do for the other strings. Do not forget that when you bend the string with your pinkie, ring or long finger, you can use other fingers along with the first one to help it bend the string (it is called reinforcement).

The following exercise incorporates half and whole step bends, and should be practiced not only in 10<sup>th</sup> position on **E** 1<sup>st</sup> string, but also in other positions on other strings!!!

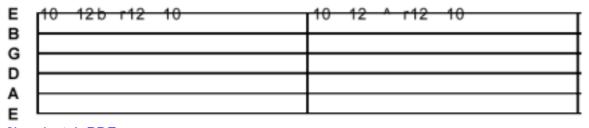
Fig. 18 Bends

#### **Notes**



Observe that the thinner  $\mathbf{E}$  1<sup>st</sup>, 2<sup>nd</sup> and  $\mathbf{G}$  3<sup>rd</sup> strings should be bended upwards, while the bass strings are preferably bended downwards, towards the floor.

#### **Tablature**



2bends tab.PDF

**NOTE** The simple tablature employed in this example (ASCII tablature) does not include the graphic arrows of the note example, but uses b = bend, r = return from bend and  $^ = high$  bend.

**ROCK** The **unison bend** is very common in rock. You pick two strings at the same time, and bend the thicker one to the same pitch as the thinner string.

Fig. 19 Unison Bends

#### **Notes**



Bended notes can be made even more expressive by vibrating the string. This technique might take you some time to develop, since you must hold the same pitch *and* shake the string simultaneously. On the other hand, it is a great articulation technique, worth working on.

# **ORNAMENTATION**

**Trill t** played by a quick hammer-on and pull-off movement of one of the left-hand fingers, up to a duration several seconds if desired.

Fig. 20 Trills

# **Notes**



**Mordent** or **Reverse Mordent** is a target note followed by a quick hammer-on or pull-off, followed by another quick pull-off respectively hammer-on which returns to the target note. The standard Mordent uses the pull-off and the Reverse Mordent uses the hammer-on.

Fig. 21 Trills

#### **Notes**



**Grace notes** or **appoggiatura** is a very short note that precedes the main note. It can be played with a quick pull-off, hammer-on, or with a slide into the target note.

Fig. 22 Grace Notes or Appoggiatura

# **Notes**



2grace.pdf

**Turn** •• are a quick upward or downward legato consisting of three notes (middle note=same pitch as the target note), followed by a quick pull-off respectively hammer-on to the target note.

Fig. 23 Turns

# **Notes**



2turns.PDF

#### **DYNAMICS**

Another way of articulating a note is picking the string softer or harder, thus decreasing or increasing the volume of the note. When you play your guitar keep in mind that the music should sound equally high throughout the time (if there is nothing else stated of course).

The main dynamic terms in music are *piano* ( ) soft and *forte* ( ) strong, but there are several others you should be familiar with. Look in the All Aspects of ROCK & JAZZ/1 Music Theory for more information about this articulation method.

#### **TIMBRE**

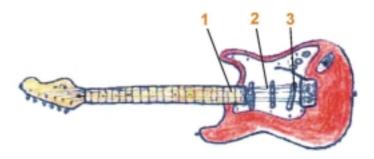


Fig. 24 Choose Timbre by Picking Position

- 1 Very soft timbre (rhythm guitar, typical)
- 2 Neutral timbre
- 3 Hard timbre, lots of overtones (solo playing, especially in rock)

Timbre means note colour and is created by a characteristic pattern of overtones. You can vary it by picking the strings while holding the pick in different angles in respect to the strings or/and picking strings closer to the bridge or closer to the neck. In the first case you will get a colder sound, in second case a warmer sound. You can also change your controls on your guitar or/and change the microphone switch. Another way to change timbre is to experiment with an effect pedal in many various ways, let your fantasy flow!



# **Index Choice of Guitar Technique**

1

1st, 2, 4, 5, 6, 15, 17, 33

2

2nd, 4, 5, 6, 15, 33

3

3rd, 4, 5, 6, 15, 33

4

4th, 4, 5, 6, 15

5

5th, 4, 5, 6

7

7th, 6

Α

Alternate, 22, 24 Anatomy, 3 Appoggiatura, 37 Articulation, 15, 29

В

Bend, 34 Bends, 33, 34 Brain, 8

C

Circular, 19 Concentration, 8 Consciousness, 8 Controls, 3 Coordination, 25, 26

D

Damping, 15, 19

Е

Exercise, 16, 17

F

Fender, 3 Finger, 18 Fingerplate, 3 Frets, 3 Fun, 13

Н

Hammer-on, 30 Hand, 15, 16, 18, 27 Hybrid, 24

Interval, 6

Legato, 29

M

Malmsteen, 10 Mordent, 36

0

Orchestra, 2

P

Physiology, 12 Piano, 4 Picking, 18, 19, 22, 24, 39 Pickup, 3 Plectrum, 18 Position, 3, 18, 39 Practicing, 10, 13, 14 Pull, 30, 32 Pull-off, 30

R

Rhythm, 19

S

Second, 9 Slide, 17, 31 Speed, 27 Staccato, 29 Strum, 5 Sweep, 23

Т

TAB, 16 Tablature, 16, 17, 20, 21, 22, 23, 26, 31, 33 Timbre, 39 Tuning, 3, 4, 5

V

Variations, 13 Vibrato, 3, 32 Volume, 2

W

Warm-up, 13