A.P.S. Tuning Trainer™

A.P.S. Development LLC ®

User Guide

Software Version 1.0

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Introduction

The *A.P.S. Tuning Trainer™* has been designed by A.P.S. Development LLC ® to provide a unique tool for musicians to help them develop better pitch discrimination as it relates to the tuning process. By utilizing this amazing tool, anybody can improve their ability to compare pitches more accurately and tune properly. A four-week, step-by-step, program/curriculum that utilizes our application, entitled "Better Pitch Discrimination in Four Weeks!", is included as part of the *A.P.S. Tuning Trainer™ User Guide*.

The *A.P.S. Tuning Trainer™* design was guided by established ensemble directors, musicians, and educators to ensure that it is a highly useful and effective program that provides tangible results.

Main Screen

The top of the main screen of the *A.P.S. Tuning Trainer™* consists of a header with a "Refresh-button", a "Settings-button", and an indication panel that displays the number of correct answers, the number of replays, and the current "pitch variance" settings. The middle of the main screen consists of three "Answer-buttons" and the Question-navigation (control) buttons: "backward" (review the questions with the correct answer shown), "play/replay", and"next". The bottom portion of the main screen consists of program options: "Main Screen", "Help", and "Information".

Main Screen Notes:

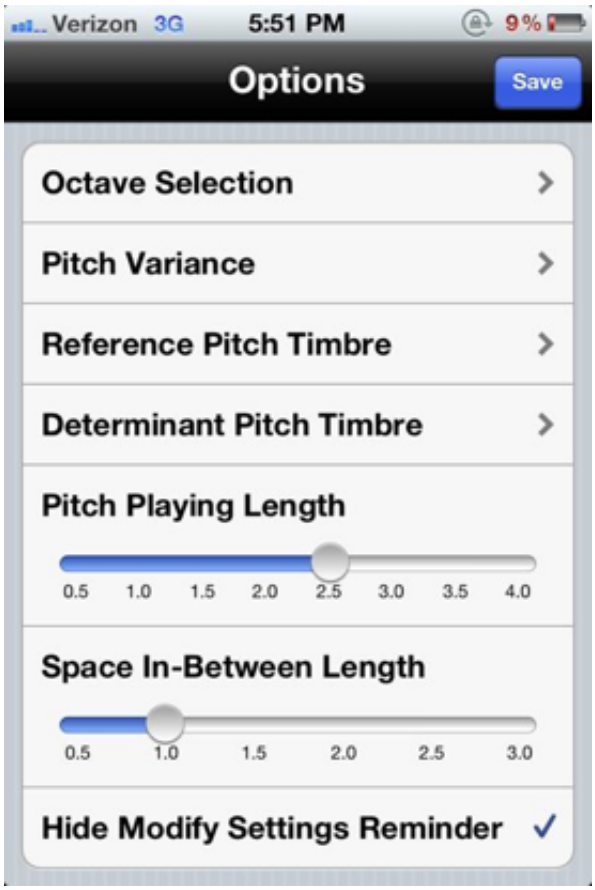
1. Pressing the "backward" button will allow the review of previous questions and allow the "playing" of the previous question to help with learning better discrimination.

2. Pressing the "play" button will start the current question -pressing it again will "replay" the pitch and add "1" (one) to the replay counter.

3. Pressing the "forward" button will automatically move to and play the next question.

4. Pressing the "refresh" button will reset the counters and reset the program to its initial startup phase.

Options Screen



The Options Screen consists of 7 option settings:

1. Octave Selection
   Choose from 6 selections that determine the playing range of the pitches ... A4 = A-440 Hz (A above Middle C)

2. Pitch Variance
   Choose the range of how "flat" or "sharp" the Determinant pitch can be from the Reference pitch in "cents" ... "x" is the low value and "y" is the high value ... a "x" vale of "25" and a "y" value of "25" will result with the Determinant pitch always being either 25 cents "flat" or "sharp" from the Reference pitch -if it is not the "same" --> larger "x" and "y" values will result in Determinant pitches that are easier to detect correctly ...

3. Reference Pitch Timbre
   Choose from piano, brass, flute, strings, bell, woodwind, choir (vox), or a "random" timbre (sound color) for the Reference pitch (the first pitch)

4. Determinant Pitch Timbre
   Choose from piano, brass, flute, strings, bell, woodwind, choir (vox), or a "random" timbre (sound clolor) for the Determinant pitch (the second pitch)

5. Pitch Playing Length (in seconds)
   Choose how long both the determinant and the reference pitch will sound when played

6. Space In-Between Length (in seconds)
   Choose how long of a space (in seconds) transpires between hearing the Determinant pitch

7. Hide Modify Settings Reminder
   Check this if you do not want to be reminded about resetting the score when the options are changed

General Usage

First, select/change any desired options in settings screen. After selecting the desired options, choose "save" to return to the main screen. A typical session with the *A.P.S. Tuning Trainer™* will consist of playing through a number of questions:

1. Touch the play button

2. Listen to the 1st pitch (Reference pitch) and then listen to the 2nd pitch (Determinant pitch)

3. Decide if the 2nd pitch (Determinant pitch) was either the same, flat, or sharp when compared to the 1st pitch (Reference pitch)

4. Touch the answer button that corresponds to your decision in step 3

A.P.S. Tuning Trainer™ will then grade your response.

Touch the "OK" button to automatically be presented with your next question If, at anytime, you wish to review the previous question(s), touch the "backward" button. Then, touch the "play" button to hear the reviewed question (the reviewed page/question displays the correct answer in orange). To cycle through the review pages, simply touch the "backward" and "next" buttons. To move on to the next unanswered question, touch the play button.

To reset the program and clear the count, touch the "reset" button located on the upper-left of the main screen.

Making "Cents" of Pitch Variance

A "cent" is a logarithmic unit used to measure a music interval. In the equal temperament tuning system, each octave consists of 12 equally spaced notes (semi-tones). Utilizing sub-division, each note (or semi-tone) can be divided into 100 equal parts -or "cents". Each "cent" is 1/100 of a semi-tone (or note). A note that is 50 cents sharp is half-way toward the next semi-tone -or exactly in the middle of two neighboring semi-tones ("B" and "C" for example).

The following is a chart related to pitch discrimination and goals/awareness levels:

Pitch Variance	**Level of Awareness/Goals**
40-50 Cents (able to discern difference) -approx. 1/2 of a semitone	Typical non-musician
30-39 Cents (able to discern difference) -approx. 1/3 of a semitone	Beginning of better tuning (obtainable quickly by all)
20-29 Cents (able to discern difference) -approx. 1/4 of a semitone	Necessary minimum level for all musicians

10-19 Cents (able to discern difference) -approx. 1/8 of a semitone	The GOAL proficiency for all musicians
5-9 Cents (able to discern difference) -approx. 1/12 of a semitone	Superior discrimination -not easily obtained
1-4 Cents (able to discern difference)	Typically considered NOT possible

Pitch Variance Settings Screen

Adjusting the Pitch Variance options:

- Choose from three presets: Easy, Moderate, and Hard or "dial-in" a specific setting using the "X" and "Y" thumb-dials
- Note: The Y value will always be equal to or greater than the X value and the program will self-adjust itself as needed

Better Pitch Discrimination in Four Weeks (20 Days)!

The following is a suggested curriculum/program, created by the authors of this application, to guide you in

obtaining the "Goal" proficiency of 10-19 cents pitch discrimination.

There are a number of fantastic functions in this program that may not be readily apparent to the user when first using this application. One of them is the ability to change the timbre of both the Reference and Discriminant pitches. While a musician may be able to easily discern between two "trumpets", comparing a trumpet to a woodwind is, in reality, much harder to accomplish due to the timbre differences. Additionally, some musicians have difficulty with higher or lower pitch ranges and the *A.P.S. Tuning Trainer™* allows adjustments in these areas as well *A.P.S. Tuning Trainer™* allows for training in these areas and others as well.

The goal of any musician, with regard to tuning, should be to easily tune themselves and others correctly without any difficulty. Honing your tuning skills will rapidly transfer into the ability to differentiate and fix intonation issues as well. Also, solfeggio skills such as interval training and chord discrimination will be helped by utilizing this application. Utilizing this application effectively to develop better tuning skills will expand your understanding and prowess of related musicianship skills exponentially. The suggested curriculum is designed to change pitch variances, timbres, octaves, and even the time between each pitch in an organized and effective manner so that that the learning process is maximized to its highest extent.

4 week, 20 Day *A.P.S. Tuning Trainer™* Curriculum:

Objective: *Develop increased abilities with regard to comparing pitches (tuning)*

Materials: *A.P.S. Tuning Trainer™*

Time: *20-30 minutes on 5 different days on 4 consecutive weeks (suggested: Monday through Friday)*

NAfME **National Standards Met:** 6 and 7

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Week 1:

Day 1:

- Octave Selection: A4-A5 (1 Octave)
- Pitch Variance: X=40 and Y=40
- Reference Timbre: Bell
- Determinant Pitch Timbre: Bell
- Pitch Playing Length: 2
- Space In-Between: 2

Day 2:

- Octave Selection: A4-A5 (1 Octave)
- Pitch Variance: X=39 and Y=39
- Reference Timbre: Piano
- Determinant Pitch Timbre: Piano
- Pitch Playing Length: 2

- Space In-Between: 2

Day 3:

- Octave Selection: A4-A5 (1 Octave)
- Pitch Variance: X=38 and Y=38
- Reference Timbre: Brass
- Determinant Pitch Timbre: Brass
- Pitch Playing Length: 2
- Space In-Between: 2

Day 4:

- Octave Selection: A4-A5 (1 Octave)
- Pitch Variance: X=37 and Y=37
- Reference Timbre: Piano
- Determinant Pitch Timbre: Piano
- Pitch Playing Length: 2
- Space In-Between: 2

Day 5:

- Octave Selection: A4-A5 (1 Octave)
- Pitch Variance: X=36 and Y=36
- Reference Timbre: Choir
- Determinant Pitch Timbre: Choir
- Pitch Playing Length: 2
- Space In-Between: 2

Week 2:

Day 6:

- Octave Selection: A3-A4 (1 Octave)
- Pitch Variance: X=35 and Y=35
- Reference Timbre: Strings
- Determinant Pitch Timbre: Strings
- Pitch Playing Length: 2
- Space In-Between: 2.5

Day 7:

- Octave Selection: A3-A4 (1 Octave)
- Pitch Variance: X=33 and Y=33
- Reference Timbre: Flute
- Determinant Pitch Timbre: Flute
- Pitch Playing Length: 2
- Space In-Between: 2.5

Day 8:

- Octave Selection: A3-A4 (1 Octave)
- Pitch Variance: X=31 and Y=31
- Reference Timbre: Bell
- Determinant Pitch Timbre: Piano
- Pitch Playing Length: 2
- Space In-Between: 2.5

Day 9:

- Octave Selection: A3-A4 (1 Octave)
- Pitch Variance: X=29 and Y=29
- Reference Timbre: Bell
- Determinant Pitch Timbre: Flute
- Pitch Playing Length: 2
- Space In-Between: 2.5

Day 10:

- Octave Selection: A3-A4 (1 Octave)
- Pitch Variance: X=27 and Y=27
- Reference Timbre: Bell
- Determinant Pitch Timbre: Choir
- Pitch Playing Length: 2
- Space In-Between: 2.5

Week 3:

Day 11:

- Octave Selection: A3-A5 (2 Octaves)
- Pitch Variance: X=20 and Y=25
- Reference Timbre: Bell

- Determinant Pitch Timbre: Piano
- Pitch Playing Length: 1.5
- Space In-Between: 2.5

Day 12:

- Octave Selection: A3-A5 (2 Octaves)
- Pitch Variance: X=20 and Y=25
- Reference Timbre: Bell
- Determinant Pitch Timbre: Random
- Pitch Playing Length: 1.5
- Space In-Between: 2.5

Day 13:

- Octave Selection: A3-A5 (2 Octaves)
- Pitch Variance: X=19 and Y=22
- Reference Timbre: Bell
- Determinant Pitch Timbre: Random
- Pitch Playing Length: 1.5
- Space In-Between: 2.5

Day 14:

- Octave Selection: A3-A5 (2 Octaves)
- Pitch Variance: X=19 and Y=21
- Reference Timbre: Bell
- Determinant Pitch Timbre: Random
- Pitch Playing Length: 1.0
- Space In-Between: 2.5

Day 15:

- Octave Selection: A2-A4 (2 Octaves)
- Pitch Variance: X=19 and Y=20
- Reference Timbre: Bell
- Determinant Pitch Timbre: Random
- Pitch Playing Length: 1.0
- Space In-Between: 2.5

Week 4:

Day 16:

- Octave Selection: A3-A5 (2 Octaves)
- Pitch Variance: X=18 and Y=18
- Reference Timbre: Random
- Determinant Pitch Timbre: Bell
- Pitch Playing Length: 1.0
- Space In-Between: 3.0

Day 17:

- Octave Selection: A2-A5 (3 Octaves)
- Pitch Variance: X=17 and Y=17
- Reference Timbre: Random
- Determinant Pitch Timbre: Bell
- Pitch Playing Length: 1.0
- Space In-Between: 3.0

Day 18:

- Octave Selection: A2-A5 (3 Octaves)
- Pitch Variance: X=14 and Y=16
- Reference Timbre: Random
- Determinant Pitch Timbre: Random
- Pitch Playing Length: 1.0
- Space In-Between: 3.0

Day 19:

- Octave Selection: A2-A5 (3 Octaves)
- Pitch Variance: X=11 and Y=13
- Reference Timbre: Random
- Determinant Pitch Timbre: Random
- Pitch Playing Length: 1.0
- Space In-Between: 3.0

Day 20:

- Octave Selection: A2-A5 (3 Octaves)
- Pitch Variance: X=10 and Y=10
- Reference Timbre: Random

- Determinant Pitch Timbre: Random
- Pitch Playing Length: 1.0
- Space In-Between: 3.0

(Find this complete User Guide with Curriculum on the A.P.S. Development LLC ® Website [PDF])

If you follow this curriculum precisely, you will notice VAST improvements in your ability to tune properly and accurately. You may need to adjust this curriculum to suit your schedule or fit your needs by adding additional times and variances and some people may progress faster or slower than others.

The KEY to success is to do use theA.P.S. Tuning Trainer™ over a period of time and to apply what you are learning with it to real-world applications.

Contact Information

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###END User Guide