

# USER MANUAL

Version 4.0  
April 21, 2011



## Revision Sign-off

By signing the following, the team member asserts that he has read the entire document and has, to the best of his knowledge, found the information contained herein to be accurate, relevant, and free of typographical error.

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## Revision History

The following is a history of document revisions.

<b>Version</b>	<b>Changes</b>	<b>Edited</b>
<b>Version 1.0</b>	Initial draft.	<b>3/19/2011</b>
<b>Version 4.0</b>	Updated to version 4.0 to match other documents. Various revisions and additions.	<b>4/26/2011</b>

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# 1. Introduction

## 1.1 Purpose

This document is intended to be a thorough user's guide for the *Healing Touch* system. Included is an overview of *Healing Touch* and its components, installation instructions, and a walkthrough for both general and advanced users.

## 1.2 Identification

*Healing Touch* is a computerized system designed to provide therapeutic and rehabilitative exercises through gaming on multi-user, multi-touch devices. The *Healing Touch* system is devised to be symmetric among the two multi-touch gaming platforms available to the program: the Microsoft Surface and Apple iPad. Therefore, the interface for the Microsoft Surface is almost identical to the interface of the Apple iPad. Along with the framework, the *Healing Touch* system consists of a standalone application (*Healing Vision*), and a database.

## 1.3 Scope

*Healing Touch* is initially being released with the support for: a uniform framework for both platforms that allows for the augmentation of games, a standalone application for clinician usage, and a database that accommodates the patient and game data.

## 2. Glossary

Apple iPad	The Apple iPad is a touch-interface tablet computer designed and distributed by Apple.
<i>Healing Touch</i> Framework	The framework is the backend software that allows a user to login and choose a game. It also handles data collected from game plays and sends this data to the database.
WAP	Wireless Access Point
Microsoft Surface	Microsoft Surface is a multi-touch product from Microsoft which is a combination of software and hardware technology that allows a user, or multiple users, to manipulate digital content by the use of gesture recognition.
<i>Healing Vision</i>	Standalone application designed to access the <i>Healing Touch</i> database

## 3. Describing the System

### 3.1 System Components

*Healing Touch* is a computerized system designed to provide therapeutic and rehabilitative exercises through gaming on multi-user, multi-touch devices. The system is made up of several different components which are described below.

#### 3.1.1 *Healing Touch* Framework

The framework is the main application that runs on the Microsoft Surface and the Apple iPad. Users can login to Test Mode or Free Play mode. By using a valid ID card, the user will login to Test Mode where game results will be stored in the database. Free Play mode makes all game options available and does not store any game data. The framework is designed to simplify the process of adding new games to the system later.

#### 3.1.2 *Healing Vision*

*Healing Vision* is an application designed to provide clinicians with a simple interface to the database. Through *Healing Vision*, clinicians will be able to add new patients and clinicians, generate and print ID tags for those patients and clinicians, edit patient information, change patient game options, generate reports and queries from database data, and print the results of those reports.

#### 3.1.3 Database

Each part of the system communicates with the database. The framework sends and receives login information as well as patient preferences. *Healing Vision* can add and edit patients, clinicians, and game options. *Healing Vision* can also generate and save reports consisting of patient data or game data. Finally, all games receive game options for a specific patient from the database and send data about that play session when the game ends back to the database.

#### 3.1.4 Games

The games created for *Healing Touch* are designed to incorporate a variety of cognitive and neuromuscular skills testing. Each game focuses on testing a different set of skills. Clinicians can modify the game to focus on specific areas by changing the game options using either their clinician ID card or *Healing Vision*. Each game loads these options from the database on startup. On the Surface, data about that play session is sent to the database once the game ends, whereas on the iPad the clinician must select to transfer data from the local database to the main database.



### 3.2 Environment

*Healing Touch* requires the following hardware environment to operate:

- Microsoft SQL Server 2008 R2
- Apple iPad or Microsoft Surface with network capabilities
- A computer with a Windows operating system of XP or greater
- Wireless Access Point for wireless communication between the iPad and the server
- All components able to communicate on a network

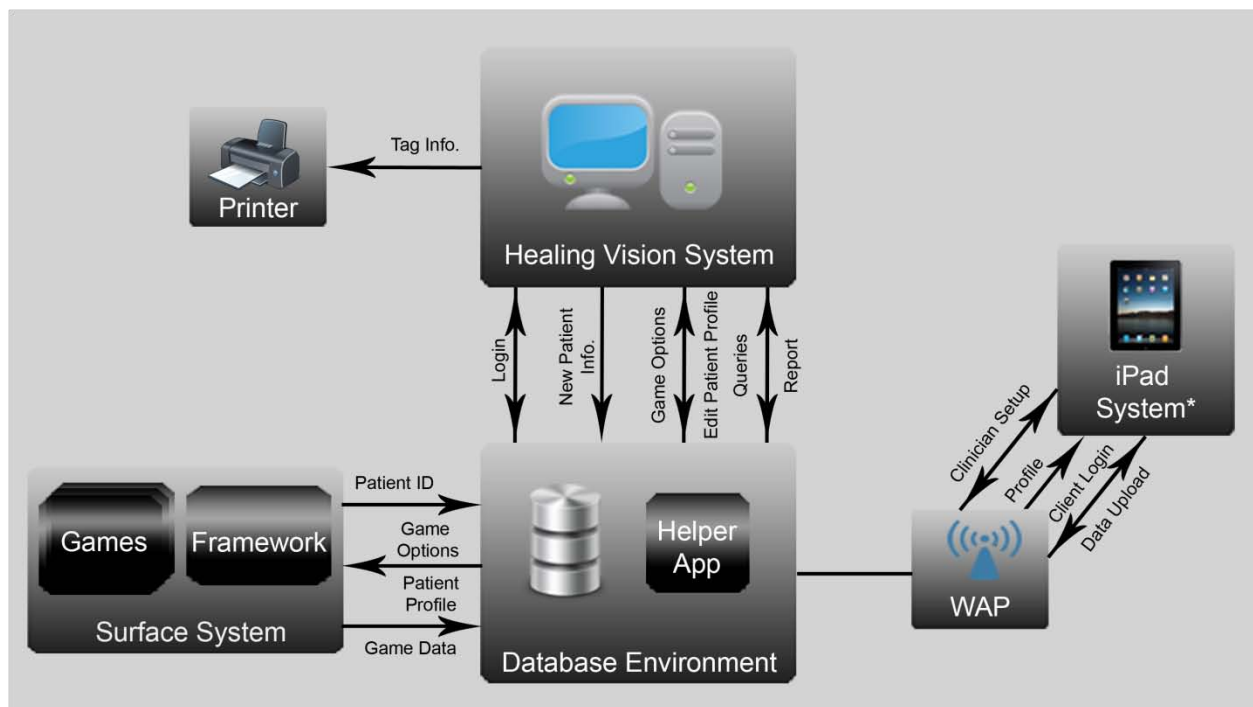


Figure 3.1 - The environment and data flow of the Healing Vision system

## 4. Installation & Setup

The following will need to be setup in order to use the Healing Touch system:

### 4.1 Database

#### 4.1.1 SQL Database Setup

Patient, clinician, and game data are stored in a Microsoft SQL Server 2008 R2. This server will need to be installed on a Windows Server 2008 or better machine.

To create the database schema:

1. Locate the 'HealingTouchDB.sql' SQL script file included on the *Healing Touch* DVD
2. Open Microsoft SQL Server 2008 R2
3. Go to File > Open > Open File and select the HealingTouchDB.sql file
4. Run the query

The script will execute a sequence of commands that will create all necessary tables and row insertions.

**Run the following command in a new query, replacing <location> with your clinic location ID and <Password> to the desired root password.**

```
insert into Administrator values(0,'root','root',0,'root',<location>,'root@root.com','<password>');
```

This will set-up the root account.

#### 4.1.2 iPad Helper App Setup

The database machine also needs to be running an iPad helper application to allow communication between the iPad and the SQL database. To run the helper application:

1. Retrieve the *ipadhelperapp.exe* from the *Healing Touch* DVD and move it to the server
2. Run *ipadhelperapp.exe*

To setup the connection to the SQL server, specify a port (e.g. 1337) for the application to connect on. This same port will later be used during the iPad setup.

The iPad can now communicate with the Microsoft SQL server.

## 4.2 *Healing Vision*

The *Healing Vision* clinician application should be installed on a machine that is on the same network as the database and the two multi-touch devices.

To install *Healing Vision* you must have the following installed on the desired machine:

- Microsoft Windows 7
- Microsoft Office 2007 or greater
- Microsoft .NET Framework 4
- Adobe PDF Reader

.NET Framework 4 is available at:

<http://www.microsoft.com/downloads/en/details.aspx?FamilyID=9cfb2d51-5ff4-4491-b0e5-b386f32c0992&displaylang=en>

Follow these steps to install *Healing Vision*:

1. Locate the /Installers/HealingVisionInstaller directory on the *Healing Touch* DVD
2. Run the setup.exe executable file
3. Follow the prompts to complete installation

## 4.3 Apple iPad

The *Healing Touch* application is designed to run on the Apple iPad. Currently, the *Healing Touch* app can only be installed from source code (refer to Developer Guide). In the future, if the app is submitted and accepted to the App Store, it will be available for download by anyone with an App Store account.

The iPad App also needs the iPad Helper running and configured by the clinician (refer to section 5.1.2) before the client can use it.

## 4.4 Microsoft Surface

The *Healing Touch* application is designed to run on the Microsoft Surface SP1.

To install *Healing Touch* you must have Microsoft XNA Game Studio which is available at:

<http://www.microsoft.com/downloads/en/details.aspx?FamilyId=7D70D6ED-1EDD-4852-9883-9A33C0AD8FEE&displaylang=en>

Follow these steps to install *Healing Touch*:

1. Locate the *Healing Touch* directory on the *Healing Touch* DVD
2. Run the SurfaceHealingTouchInstaller.exe
3. Follow the prompts to complete installation
4. Once the install is complete you can run *Healing Touch* through the Surface Shell or “Enter User Mode” and it will show up in the menu

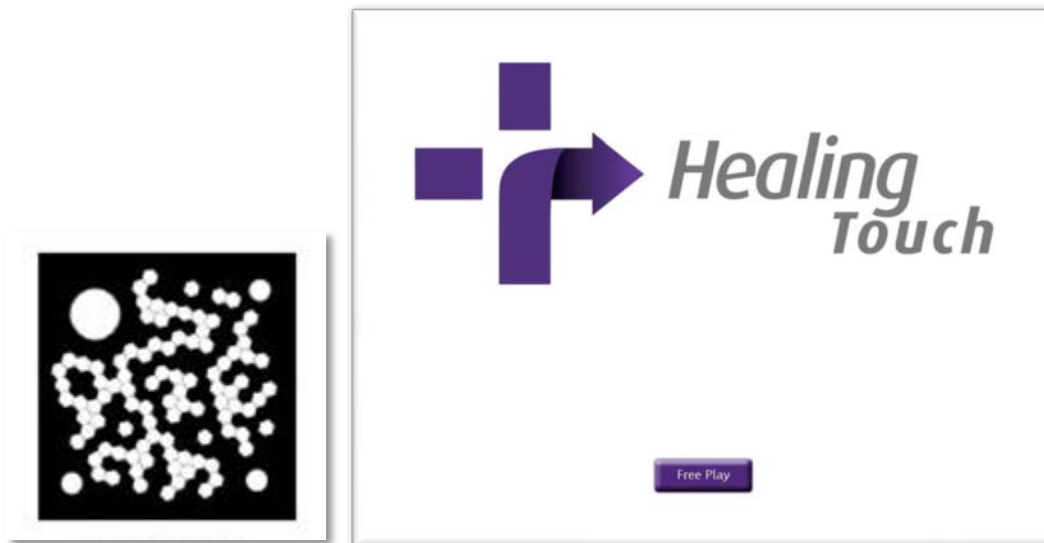
## 5. System Walkthrough

### 5.1 *Healing Touch* Application

The *Healing Touch* application runs on both the Microsoft Surface and the Apple iPad. Functionality between the two platforms should be nearly identical, with a few exceptions. To start the *Healing Touch* application on the Surface or iPad, simply select the application from the device menu. You should be presented with a login screen.

#### 5.1.1 *Healing Touch* on the Surface

Once the application is started on the Surface, the user can either login using his or her unique Surface tag, or select 'Free Play' to play games with default options.



*Figure 5.1 - Surface Tag and Healing Touch Login Screen on the Surface*

On login, the user will be presented with a game menu screen. The user can now select a game to launch. If the user is playing in 'Free Play' mode, he or she may have the option to set their own game options by opening the options screen. If not in 'Free Play' mode, the user will already have their game options set for them on every game.

A clinician may select on-the-fly options for a user by placing his or her clinician Surface tag on the table, which will open the game options screen. Currently, only Froggie Says supports this feature.

Once a patient is done with their session, they simply logout of the system by selecting the 'Logout' button on the game selection screen.

## 5.1.2 Healing Touch on the iPad

### Setting up the iPad for a Patient

Before a patient can use the *Healing Touch* application on the iPad, it must be configured by a clinician. The clinician needs to navigate to the login panel and click the info icon on the bottom left corner of the login screen to open the Configuration Panel.



Figure 5.2 – Healing Touch Login screen on the iPad

Make sure the iPad Wifi is on. The host is the IP/hostname of the machine the iPad Helper is running on and the port is the port that the iPad Helper App is listening to. The clinician must provide his or her credentials to reach the Configuration Panel.

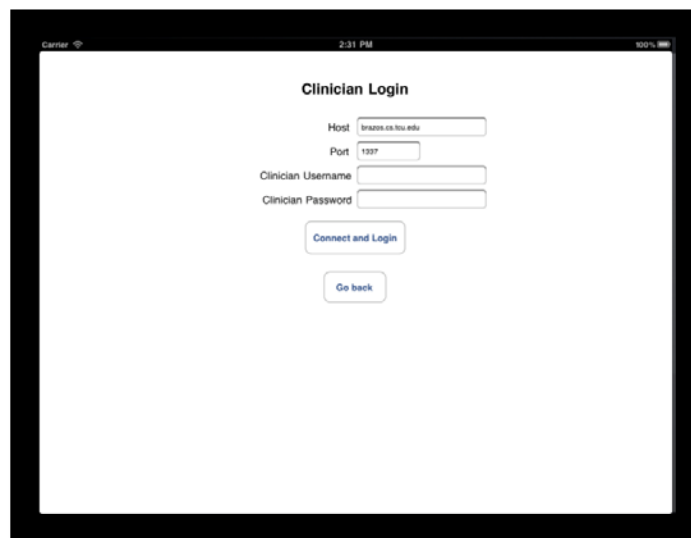


Figure 5.3 – Healing Touch Clinician login on iPad

Once logged in, if there is patient’s data in the iPad, the clinician can upload data to the main database by pressing the “Upload Data” button. The data will still be in the local database after it’s uploaded to the main database.

To setup the iPad for a patient, the clinician should enter the patient’s ID and location. By pressing the ‘reset DB’ button, the clinician clears the local database of old game data in preparation for use by the new patient. After the iPad is setup, only that particular patient can login on it.

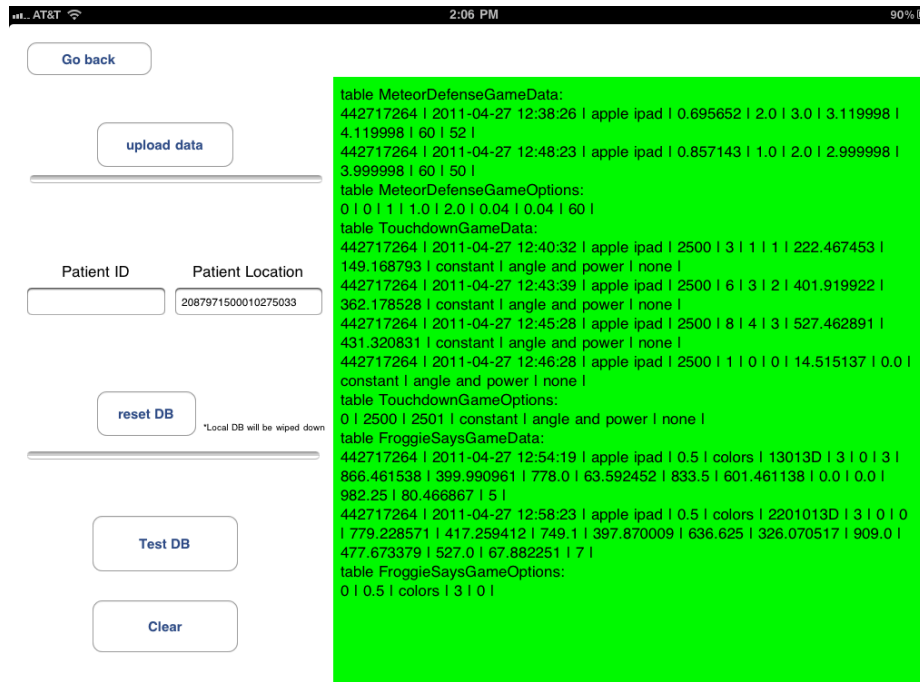


Figure 5.3 – Configuration Panel

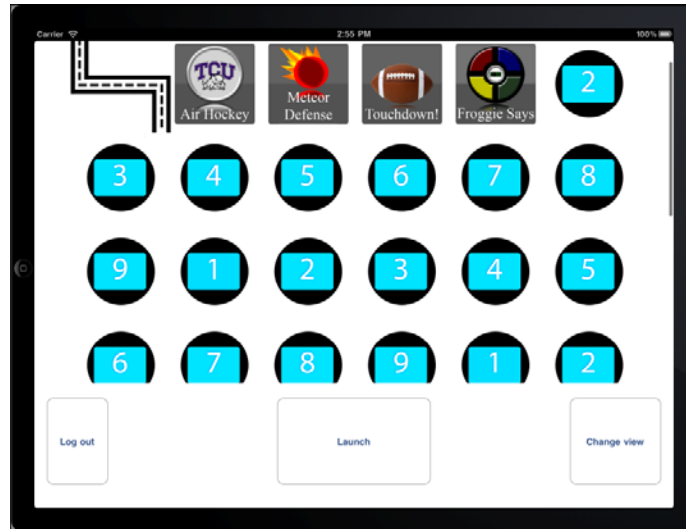
The local database content can be seen by pressing the “Test DB” button. These tables correspond to the tables with the same names in the main database. This is only to make sure that the data is transferred correctly.

The “Clear” button will clear the output of the “Test DB” button. After the clinician is done, s/he can go back to the login page by pressing the “Go back” button.

The menu and games function similarly to the Surface with a few exceptions. ‘Free Play’ mode is not available on the iPad. Also, clinicians setting games options on-the-fly is not available.

**Patient use of the iPad**

After the iPad is setup, the patient can login with their ID. They will stay logged in as long as they don't logout. The patient can change between the Album view and the Grid view as seen in Figure 5.4.



*Figure 5.4 – Games Menu screen on the iPad*

The patient can select and launch the game. It will display the instructions of the game. The patient can scroll horizontally if there are multiple instruction pages. Touch “Start game” to start.



*Figure 5.5 – Froggie Says Instructions screen*



## 5.2 Healing Vision Application

The *Healing Vision* application provides an easy to use portal to the *Healing Touch* database. It is intended for clinician use only.

*Healing Vision* provides the ability to:

- Add and edit patient profiles
- Print Patient Information Sheets
- Add clinician profiles
- Edit patient game options
- Create queries and reports based on patient profiles and game data
- Save custom reports
- Export reports to excel documents

To run *Healing Vision* simply double-click on the *HealingVision.exe* file. A login screen will appear seen in Figure 5.6, prompting the user to enter username and password.



Figure 5.6 - *Healing Vision* Login screen

Upon login, the user will be presented with the main menu screen. Along the top of the screen are several tabs to access the various functions of *Healing Vision*.

### 5.2.1 Add User

To add a new patient to the database, select the ‘Add Patient’ tab. Insert information about the new patient and click the ‘Add User’ button.



Figure 5.7 – Healing Vision Add User screen

The program will generate a PDF file with the new patient’s information, generated Patient ID, and a set of barcodes with a Surface tag at the bottom of the page. This file should be saved and printed with the top half kept for records and the bottom portion with the Surface tag distributed to the patient. The patient can then use the Surface tag to login to the *Healing Touch* application on the Surface.

5.2.2 Edit User

To edit a patient in the database, select the ‘Edit Patient’ tab. Enter a patient ID to lookup a specific patient in the database.



Figure 5.8 – Healing Vision Edit User screen

Once the patient options are generated, new options can be set by changing the drop down fields and inserting new information to the text boxes.

5.2.3 Reports

To generate reports based on game data and patient information, select the 'Reports' tab. Select a report to generate.

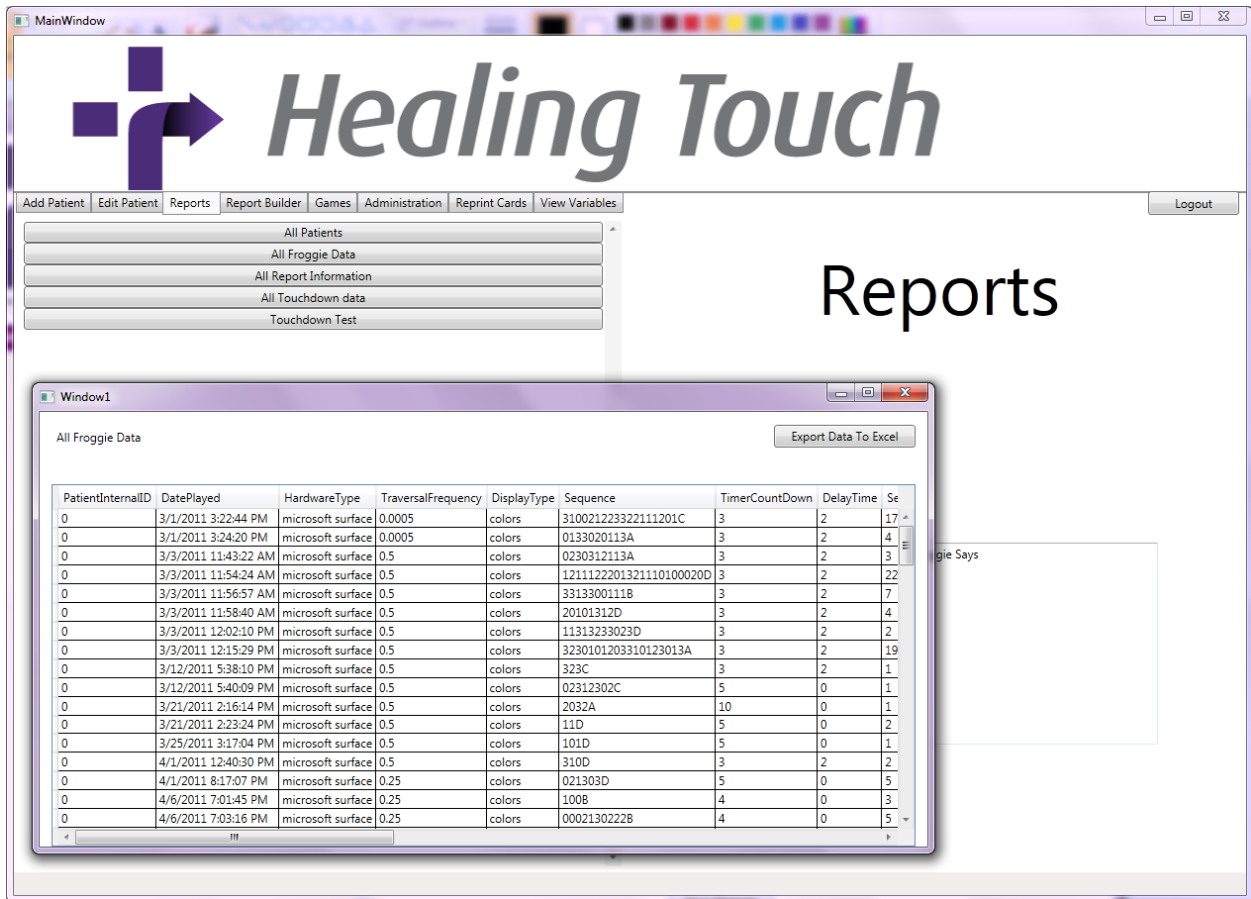


Figure 5.9 – Healing Vision Reports screen

A table will appear with the information generated from the selected report. The user can export this information to be further manipulated in a Microsoft Excel document.

### 5.2.4 Report Builder

To create custom reports on patient information and game data, select the ‘Report Builder’ tab. Here, the user has the options to specify what patients are to be selected by setting criteria in the form.

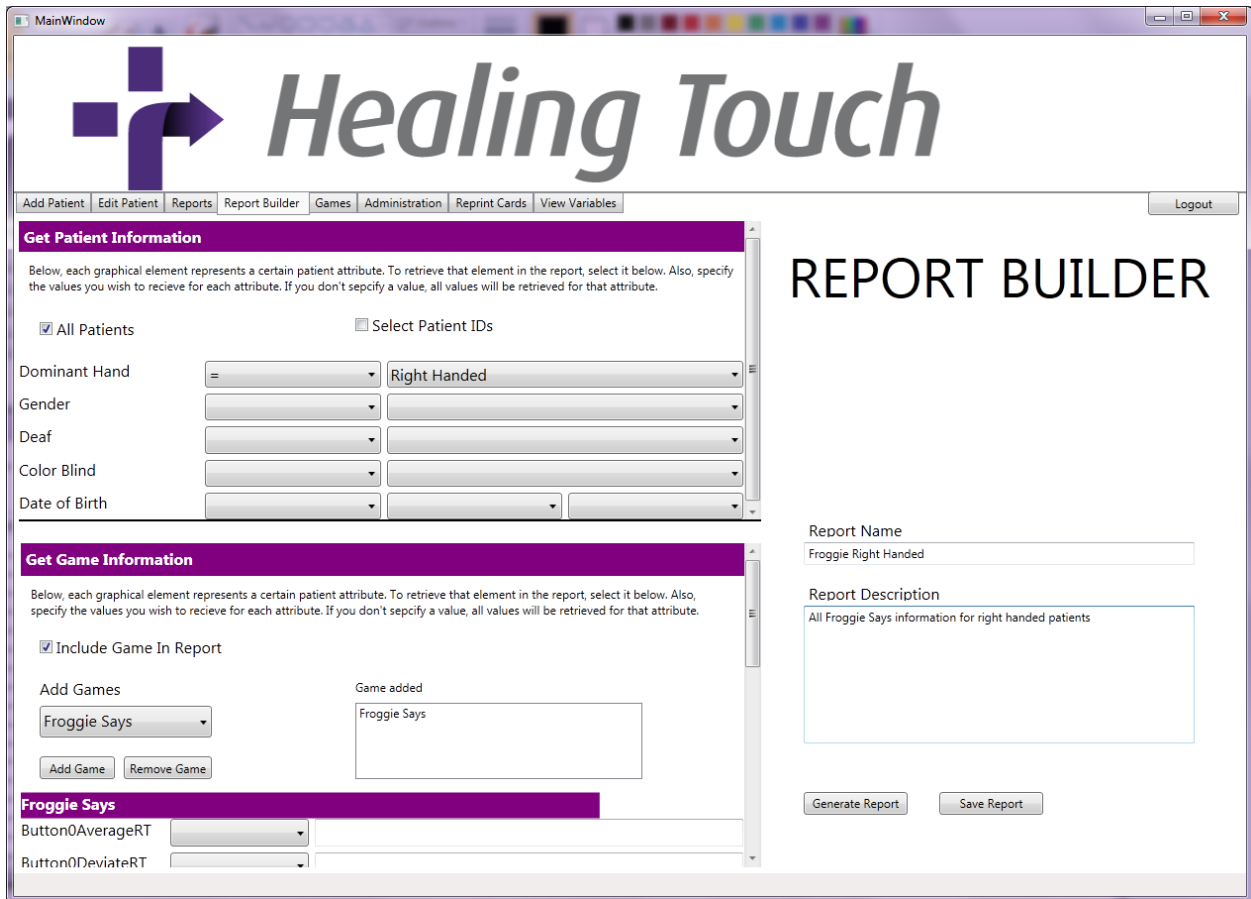


Figure 5.10 – Healing Vision Report Builder screen

The user can also select what game the report will include, as well as specific options for that game. Once the form is complete, the user can generate the results of the custom report or save the report with a name and description. Saved reports will appear in the ‘Reports’ tab for easy recall.

### 5.2.5 Set Game Options

To customize game options for specific games and patients, select the ‘Games’ tab. Here the user can set game options for specific users as well as the default options for each game.



Figure 5.11 – Healing Vision Game Options screen

Game options can be changed by first selecting the desired game in the right panel and setting the ID of the patient whose options are to be set. Upon clicking ‘Lookup Patient’, the left panel is populated with the current options for that game and patient. Changing the options in the left panel and selecting ‘Set Options’ will save those options for that game and patient. Similarly, if the clinician selects “Set Default,” the default game options will appear to the left. These options will be used if a patient does not have options set for a particular game.

### 5.2.6 Adding Clinicians

To add new clinicians to the database, select the 'Administration' tab. Adding new clinicians to the database is very similar to adding new patients.

The screenshot shows a web application window titled "MainWindow". At the top left is a logo consisting of a purple cross with an arrow pointing right. To its right is the text "Healing Touch" in a large, italicized font. Below the logo and text is a horizontal navigation bar with several tabs: "Add Patient", "Edit Patient", "Reports", "Report Builder", "Games", "Administration", "Reprint Cards", "View Variables", and "Logout". The "Administration" tab is currently selected. Below the navigation bar, the main content area is titled "Enter Clinician Information" in a purple header. This area contains a form with the following fields: "Employee ID" (839203491), "First Name" (Jim), "Last Name" (Smith), "User Name" (jsmith), "Email Address" (jsmith@test.com), "Password" (masked with dots), and "Confirm Password" (masked with dots). To the right of the form, the text "ADD CLINICIAN" is displayed in large, bold, black capital letters. At the bottom left of the form area, there is a button labeled "Add Clinician".

Figure 5.12 – Healing Vision Add Clinician screen

Simply complete the form and click 'Add Clinician' to create the new administrator and add him/her to the database. That administrator will now be able to login to the *Healing Touch* system from the current location. Administrators can only specifically interact with those patients from their location.

## 5.2.7 Reprint Patient Cards

In the event that a patient loses his or her ID card, navigate to the 'Reprint Cards' tab.

The screenshot shows a web application window titled 'MainWindow'. At the top left is the Healing Touch logo, a stylized cross with an arrow pointing right. To its right is the text 'Healing Touch' in a large, grey, serif font. Below the logo and text is a horizontal navigation bar with several tabs: 'Add Patient', 'Edit Patient', 'Reports', 'Report Builder', 'Games', 'Administration', 'Reprint Cards', 'View Variables', and 'Logout'. The 'Reprint Cards' tab is currently selected. The main content area is split into two panels. The left panel is titled 'Patient Information' and contains several form fields: 'First Name' (empty), 'Last Name' (empty), 'Dominant Hand' (dropdown menu showing 'Right Handed'), 'Gender' (dropdown menu showing 'Male'), 'Deaf' (dropdown menu showing 'No Deafness'), 'Color Blind' (dropdown menu showing 'Not Colorblind'), and 'Date of Birth' (two dropdown menus showing '2002' and '10'). The right panel is titled 'REPRINT CARD' in large, bold, black letters. Below the title is an 'Enter Patient ID:' label followed by a text input field containing the number '106859515'. Below the input field is a blue button labeled 'Lookup Patient'. Further down is an 'Additional Information:' label followed by a large, empty rectangular text area. At the bottom of the right panel is a grey button labeled 'Print Card'.

*Figure 5.13 – Healing Vision Reprint Card screen*

Fill in the Patient ID field in the right panel and click the 'Lookup Patient' button. The left panel will be populated with that patient's information. Clicking the 'Print Card' button on the bottom of the right panel will generate a PDF file with that patient's information, barcodes, and Surface tag which can then be printed.



### 5.2.8 View Game Variables

To view game variables, data types, units of measures, and description, click on the ‘View Variables’.

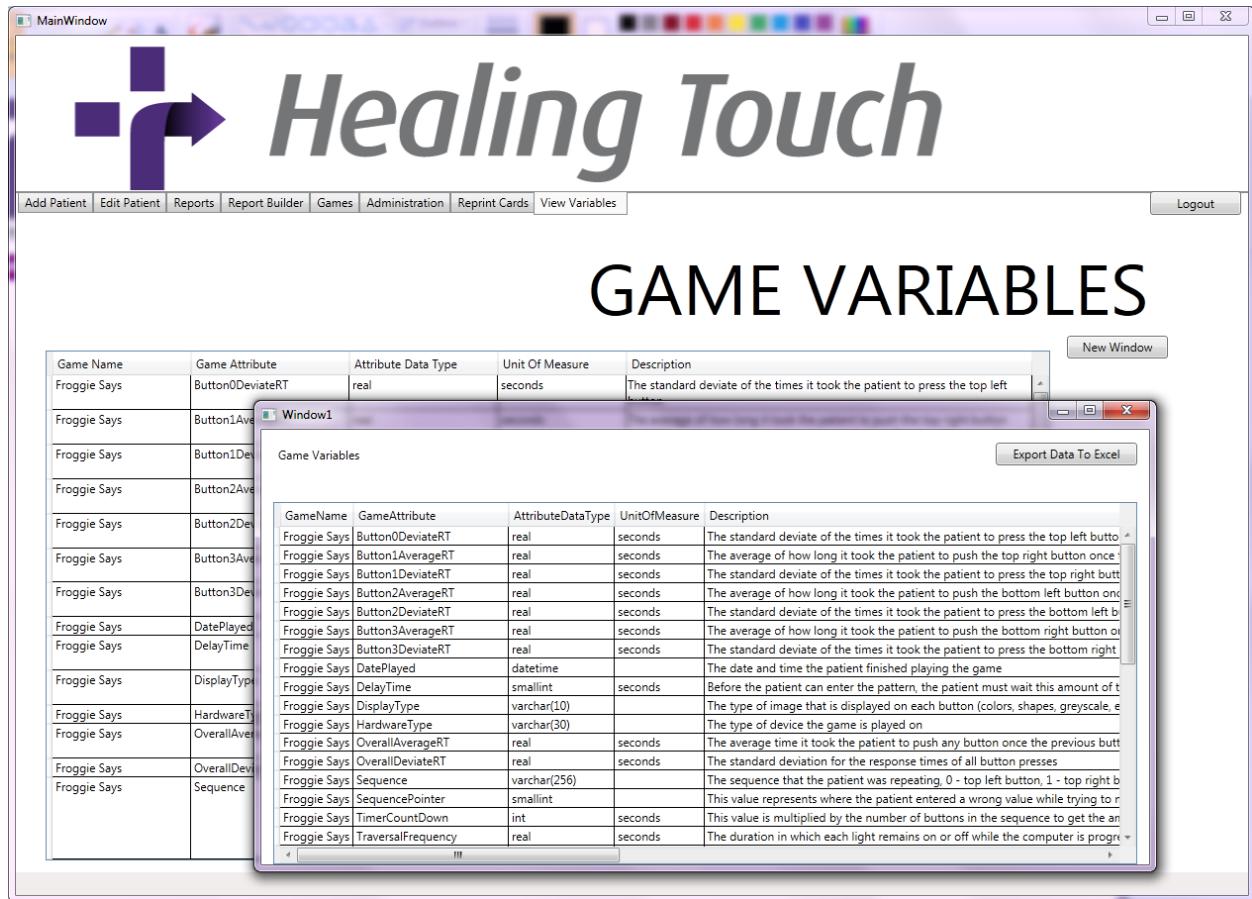


Figure 5.14 – Healing Vision Game Variables screen

This screen is intended to be a resource for clinicians if there is a question on what a certain game option means or what data type the option is expecting. Clicking on the ‘New Window’ button will open a window containing all the game variable data so the clinician can navigate to different tabs while still being able to view the variable information.

## 6. Appendix

### 6.1 Appendix A. – Froggie Says Game Data Variables

<b>Name of Variable</b>	<b>Variable Type</b>	<b>Unit of Measurement</b>	<b>Description</b>
Patient Internal ID	Integer	n/a	The internal ID for the patient.
Date	Date	n/a	The date and time the game was played.
Platform	Varchar	n/a	The platform the game was played on, (Microsoft surface, iPad.)
Traversal Frequency	Float	Seconds	The duration in which each light remains on or off while the computer is progressing through the pattern.
Game Type	Varchar	n/a	The type of game that was played (colors, grayscale, numbers, letters, shapes.)
Sequence	Varchar	n/a	The sequence that the patient was repeating, 0 – top left button, 1 – top right, 2 – bottom left, 3 – bottom right. The letters A-D are the same four buttons respectively and represent the incorrect button that was pressed to end the game. If the letter E is displayed, then the patient ran out of time.
Timer Increment	Real	Seconds	The number of seconds the timer is incremented for each extra button in the sequence.
Overall Average RT	Real	Seconds	The average response time for all buttons in the sequence.
Overall Deviation RT	Real	Seconds	The standard deviation for the response time of all button presses.
Top Left Average RT	Real	Seconds	The average response time for the top left button.
Top Left Deviation RT	Real	Seconds	The standard deviation of all top left button presses.
Top Right Average RT	Real	Seconds	The average response time for the top right button.
Top Right Deviation RT	Real	Seconds	The standard deviation of all top right button presses.
Bottom Left Average RT	Real	Seconds	The average response time for the bottom left button.
Bottom Left Deviation RT	Real	Seconds	The standard deviation of all bottom left button presses.

Bottom Right Average RT	Real	Seconds	The average response time for the bottom right button.
Bottom Right Deviation RT	Real	Seconds	The standard deviation of all bottom right button presses.
Length	Integer	n/a	The final length of the sequence.

6.2 Appendix B. – Touchdown Game Data Variables

<b>Name of Variable</b>	<b>Variable Type</b>	<b>Unit of Measurement</b>	<b>Description</b>
Patient Internal ID	Integer	n/a	The internal ID for the patient.
Date	Date	n/a	The date and time the game was played.
Platform	Varchar	n/a	The platform the game was played on, (Microsoft surface, iPad.)
Distance	Integer	Pixels	The number of pixels from the quarterback to the receiver.
Throws Taken	Integer	n/a	The total number of throws taken.
Closer Than Previous	Integer	n/a	Number of throws that are closer than the previous.
Farther Than Previous	Integer	n/a	Number of throws that are farther than the previous.
Average Distance	Real	Pixels	The average distance of all throws.
STD Distance	Real	Pixels	The standard deviation of the throws relative to the receiver.
Wind Type	Varchar	n/a	The type of wind that was used (constant, none, random)
Show Current Throw	Varchar	n/a	Specifies how much of the current throw’s information to display to the patient (none, angle, power, angle & power)
Show Last Shot	Varchar	n/a	Specifies how much of the last throw’s information to display to the patient (none, angle, power, angle & power)

**6.3 Appendix C. – Meteor Defense Game Data Variables**

<b>Name of Variable</b>	<b>Variable Type</b>	<b>Unit of Measurement</b>	<b>Description</b>
Patient Internal ID	Integer	n/a	The internal ID for the patient.
Date	Date	n/a	The date and time the game was played.
Platform	Varchar	n/a	The platform the game was played on, (Microsoft surface, iPad.)
Accuracy	Real	n/a	The total number of successful shots taken, value from 0 to 1.
Min Meteors	Integer	n/a	The minimum number of meteors that can possibly be spawned in a wave at the end of the game.
Max Meteors	Integer	n/a	The maximum number of meteors that can possibly be spawned in a wave at the end of the game.
Min Speed	Real	Pixels per frame	The minimum speed that a meteor can have at the end of the game.
Max Speed	Real	Pixels per frame	The maximum speed that a meteor can have at the end of the game.
Max Game Time	Integer	Seconds	The maximum time the game can be played.
Time Played	Integer	Seconds	The actual amount of time the game was played.