



## ***Getting Started with K-VEST™***



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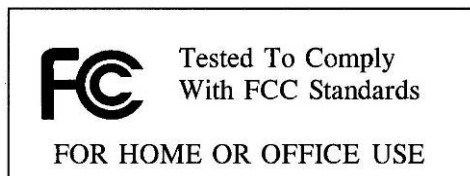
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**Regulatory Statements and Approvals****FCC Statements:**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

**Caution:** changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **Canada - Industry Canada (IC)**

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.  
cet appareil de la class B respecte toutes les exigences du Reglement sur le materiel brouiller du Canada.

### **Europe - European Union Notice**

All products with the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards).

- EN 55022 (CISPR 22) - Electromagnetic Interference
- EN 55024 (IEC61000-4-2,3,4,5,6,8,11) - Electromagnetic Immunity
- EN 61000-3-2 (IEC610000-3-2) - Power Line Harmonics
- EN 61000-3-3 (IEC610000-3-3) - Power Line Flicker
- EN 60950 (IEC60950) - Product Safety

Products labeled with the CExxxx or the CE alert marking contain a radio transmitter that complies with the R&TTE Directive (1999/5/EC) issued by the Commission of the European Community.

Compliance with this directive implies conformity to the following European Norms (in brackets are the equivalent international standards).

- EN 60950 (IEC60950) - Product Safety
- EN 300 328 Technical requirements for radio equipment.
- ETS 300 893 and ETS 301 489-17 General EMC requirements for radio equipment.
- ETS 301489-1

To determine the type of transmitter, check the identification label on your Product.

## **Precautionary Statements**



Any changes or modifications to any K-SENSOR™ unit or K-SENSOR™ wireless receiver not expressly approved by Bentley Kinetics will void the warranty and any regulatory compliance issued for the system.



Do not drop or otherwise shock the K-SENSOR™ units, because they can be permanently damaged.



Do not bend, twist, pull strongly or tamper in any way with any part of the cabling on the K-SENSOR™ wireless receiver.



Take care to avoid electric shocks. Do not plug-in or unplug the charging cable with wet hands.

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# Introduction

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K-VEST™ is a professional-level swing analysis and training system that integrates state-of-the-art wireless technology with software to give you the most advanced wireless instructional system on the market. K-VEST™ combines advanced wireless technology with KINESYNC™, a software application that allows you to capture the motion of a golfer's swing in real time, visually and graphically analyze the motion, and then train the golfer using biofeedback to improve the swing.

The standard K-VEST™ product package includes:

- 3 lightweight wireless sensors that run on rechargeable lithium ion batteries.
- A shoulder harness and belt, which hold two of the sensors. (The third sensor attaches to any standard golf glove.)
- A cable for recharging the sensors.
- A wireless receiver with standard USB connector.
- KINESYNC™ swing analysis software.
- Lightweight carrying case.
- 60 day membership to K-WEB™ online @ K-VEST.com

To use K-VEST in a lab or in the field, you will also need the following equipment:

- Dedicated daylight viewable laptop computer.
- Synchronized high-speed video camera that connects to a computer using either a FireWire or USB cable and is capable of capturing video at a rate of at least 30 frames per second.
- A stand or tripod to hold your laptop and video camera
- A set of golf clubs, some golf balls and a glove.

This guide tells you how to install the KINESYNC software, if it is not already installed, and walks you through the process of getting your equipment set up, capturing a swing, and doing a practice exercise. You can use this guide to familiarize yourself with the product before working with other golfers. However, you may have a friend work with you as a practice student.

# Installing KINESYNC™

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K-VEST requires you to have the KINESYNC™ software installed on your laptop. For product packages that include a laptop, the software comes pre-installed. Otherwise, you will need to install the software.

## Pre-Installation Check List

Before running the KINESYNC™ software installation program, make sure your laptop computer meets the following minimum system requirements:

### Laptop Computer Requirements

- ☒ Processor: 1.5GHZ Centrino or Intel Pentium 4 2.8GHZ
- ☒ Memory: 1GB RAM
- ☒ Video Card: 128 bit Video Graphics card (separate from motherboard)
- ☒ Connection ports
  - 2 USB ports
  - Firewire port including PCMCIA inserts (if video camera uses Firewire connection)
  - 2 PCMCIA slots
- ☒ Minimum Screen Resolution: 1024 x 768

### Software Requirements

- ☒ Microsoft Windows XP (Home or Professional version) with Service Pack 1 or higher.

To determine which Service Pack you have on your laptop, right-click on **My Computer**, choose **Properties...** and look on the **General** tab.

If needed, you can download and install the latest Windows Service Pack from the following internet address:

<http://www.microsoft.com/windowsxp/sp2>

- ☒ Microsoft Direct-X Runtime components. **[CHECK]**

## Running the Software Installation Program

The KINESYNC software is installed using a typical Windows installation procedure. The Windows Media Format 9 Series Runtime and video capture software are installed as part of the KINESYNC installation. This software is required for KINESYNC to capture and play video.

### To install the KINESYNC software:

1. Insert the KINESYNC software CD into your CDROM drive and wait for the installation procedure to start.

Follow the instructions provided by the installation wizard. If you need help, refer to the following instructions:

2. When the KINESYNC Software Setup Wizard displays, click **Next**.  
The Select Installation Folder window displays with the default selections.
3. To accept the default selections (recommended), click **Next** to continue the installation procedure.

Otherwise:

- Click **Browse** to select a different folder. (Click **Disk Cost** if you need to decide based on available disk space.)
- Click **Just me** if you only want to current Windows user account to have access to this software.
- When are satisfied with the selections, click **Next** to continue the installation.

A Confirm Installation window displays to indicate that the software is ready to install.

4. Click **Next** to continue the procedure.  
A window displays to show the progress of the installation.
5. When a window pops up to ask if you want to continue with installation of the Windows Media Format 9 Series Runtime files, click **Yes**.
6. Click **Yes** to accept the terms of the Windows Media Format 9 Series Runtime license agreement.
7. Click **OK** when the Windows Media Format 9 Series Runtime installation is confirmed.
8. Click **Close** in the KINESYNC Software installation window to complete the installation.

### Tip

It is usually a good idea to reboot your system after installing new software.

# Equipment Setup

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Whenever you go out in the field to work with K-VEST, you will need to set up your equipment. This chapter tells you what equipment you need and how to get it set up.

## Equipment Inventory

Whenever you are getting ready to use K-VEST in the field, you should always make sure you have the following equipment in ready-to-use condition:

- **Laptop with KINESYNC software installed** – Make sure the laptop is fully charged and has enough hard disc space to capture a number of video sessions.
- **Three K-SENSORS** and apparel for shoulders, hips, and hand:
  - Shoulder harness with a wireless sensor for shoulder movement detection
  - Belt with a wireless sensor for hip movement detection
  - Wireless sensor for hand movement detection (**byo glove**)

The wireless sensors should always be fully charged before going out in the field. We recommend that you keep all three sensors plugged into the charging cable whenever the apparatus is not in use. The pockets in the shoulder harness and belt have holes that allow you to charge the sensors without removing them from the pockets, which reduces the likelihood of the sensors getting mixed up.

- **Wireless Receiver** – This is the receiver that is supplied with K-VEST. It is designed to receive signals from the three wireless sensors in the vest.
- **Digital Video Camera** (optional) – If you plan to make a video recording of a player's swing, you must have a digital camera that is capable of capturing at a minimum 30 frames per second and is powered by either battery or AC power. You will also need the USB or Firewire cable to connect the video camera to your laptop.

- **Tripod Camera-Laptop Stand** – Whether you work with your K-VEST out on the golf course, in a lab, or in your living room, you will need to put your laptop on a secure work surface. As an optional accessory, Bentley Kinetics offers an integrated laptop and video camera tripod that has a standing-height platform for your laptop and a place to attach your video camera. At a minimum, you will need a tripod for your camera and a secure place to put your laptop.



## Setting Up the Laptop and Camera Stand

Typically, your laptop and camera is set up directly in front of where you will swing.

[aerial diagram showing orientation of tripod stand to golfer]

1. Set up the tripod as follows:
  - Take stand out of the bag
  - Spread legs on tripod with grey release button
  - Slide up extension to desired height
  - Attach camera bar (center of the bar 30 inches above the ground)
  - Screw on the camera universal joint to the camera bar
  - Attach laptop stand to the top of the tripod



2. Place DV camera on the tripod (plug in ac power if available)
  - Make sure wing nuts are fastened securely
3. Place laptop computer on the tripod (plug in ac power if available)
4. Turn the laptop power on.
5. Plug camera in to the USB port on laptop



6. Plug in wireless sensor receiver to one of the USB ports on the laptop.
  - listen for beep that the computer recognized it
  - Should see one green light on the on the top of the receiver (see below picture)



7. Turn camera on (video mode)
  - Listen for the beep, which signals that the computer recognized it

## Put on the K-VEST and Sensors

1. The sensors should also be placed in the correct location on the body. The following are the correct placing of the sensors. The letter is located in the code on the side of the sensor as seen below. This picture shows that the sensor is a hip sensor because it is a letter A in the second column.



2. Make sure all 3 sensors are positioned in the vest correctly and turned on
  - all sensors should be placed with the power switch facing “up” in the vest and belt
  - Power switch should be positioned closest to the fingers on the glove.



Switch Up  
When Placing in Pouch



Top light green prior  
to launching software



2 green lights After  
software has been launched

3. Turn on all the sensors (should see 1 green light on the top of each sensor (nearest the power switch) until the software is launched – then you should see both green lights) (see picture above)
  - Make sure top part of the switch is pushed all the way in
4. If the top sensor light is blinking (more than 3 times) that means the battery is low and needs to be charged

## Putting on the K-VEST

Whenever you want to record a golf swing, whether for analysis or exercise purposes, you will need to wear all three components of the K-VEST. ●

### To put your K-VEST on:

1. Check to make sure the sensors are installed correctly in their pockets. [\[more detail\]](#)



[new photo]

2. Attach the sensor to the glove. [\[more detail on this\]](#)
3. Turn on each sensor and check to make sure the batteries are fully charged (upper light is steady green).

[photo of sensor in pocket with lights on.]

If the top sensor light is blinking (more than 3 times) that means the battery is low and needs to be charged

4. Put the shoulder vest on and pull it down so that the shoulder sensor sits snugly against the middle of your back.
5. Put the belt on. Make sure that the hip sensor sits snugly in the small of your lower back.
6. Put the glove on and fasten it snugly. Right-handed players should put the glove on their left hand. Left-handed players should put the glove on their right hand.

[New photo]



- 7.

# Using KINESYNC

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## Starting the KINESYNC Software

Whenever you start the KINESYNC software, you will need to have an instructor and player loaded into memory. The software allows instructors to work with any player in the database and players can work with any instructor in the database. You can change instructor or player at any time after you get started. If needed, KINESYNC gives you the option to create new instructor or new player in the process of getting started. If needed, you can follow the links to those procedures under Related Topics.

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### To start the KINESYNC software:

1. Do one of the following to run KINESYNC:

- Double click the KINESYNC shortcut  on your desktop.
- Choose **All Programs > Bentley Kinetics > KINESYNC** from the Windows XP Start menu.
- Click the KINESYNC icon  in the Quickstart toolbar.

The KINESYNC logo is displayed while the software is getting started. Then, the Instructors window appears so you can load the instructor for this session.

#### QUESTION - Will icon be in quickstart toolbar?

Whenever KINESYNC starts, the Instructors window is displayed for you to either select an instructor to load or create a new instructor.

2. Create a new instructor as follows:

- Click the **Add** button to display the New Instructor window.
- Enter the instructor's information in each field. All fields except cell phone and PGA number are required.
- Click **Save**.

Control is returned to the Instructors window with the new instructor's name in the list.

- Click the name of the instructor and then click the **Load** button.

If you haven't selected a player yet, the Player Manager window is displayed.

3. Create a new player as follows:

- Click the **New Player** button.

The New Player window displays.

- Enter the player's information in each field of the New Player window. The fields with a yellow background are required.
- Click **Save**.

Whenever you save a new player, the player is automatically loaded into KINESYNC in Collect mode with a new session ready to be recorded.

3. **[FIX THIS]** Click the name of the player you're working with.

If the player has recorded previous sessions, a list of those sessions appears in the **Sessions** list. The sessions are named using the exact date and time that the session was recorded. The name uses the following format:

YYYYMMDDhhmmss (year, month, day, hours, minutes, seconds, using a 24 hour clock.) Additional information about a session is displayed under **Session Details** when the session name is selected in the **Sessions** list.

4. Do one of the following to specify the session you want:

- If you are recording a new swing, click the **New** button under the **Sessions** list to start a new session. This will get you started in Collect mode.
- If you are starting KINESYNC to analyze an existing session, click the session name in the list and then click the **Load** button. This will get you started in Analyze mode.

## KINESYNC Shortcut Keys

[introduces existence of shortcut keys – for 1 – 2 – 3 process]

You can press the following keys on your keyboard to perform the following actions.

| Key | Action                                                |
|-----|-------------------------------------------------------|
| 1   | Enter Collect mode                                    |
| 2   | Start calibration                                     |
| 3   | Start swing capture                                   |
| H   | Toggle hips on/off                                    |
| S   | Toggle shoulders on/off                               |
| A   | Toggle arms/hand on/off                               |
| G   | Toggle Virtual Guides on/off                          |
| C   | Clear current guides from memory                      |
| N   | Create new guide for selected body segment and motion |

## Checking the Sensors

[describes how to make sure you have the sensors being detected and working properly]

1. Wait about 15 seconds and allow the animation to “activate”. Move each sensor and make sure the corresponding sensor is moving the correct animation on the screen
  - a. If the sensor is moving the wrong animation – re-check the sensor placement
  - b. If the sensor placement is correct then close the software and launch the software again

## Calibrating the Sensors

Every time you put your K-VEST on to record a swing or do exercises, you will need to calibrate the wireless sensors for the intended target.

## To calibrate the sensors:

1. Press **2** on the laptop keyboard to initiate the calibration process.

An audio countdown begins.

2. Before the countdown ends, the player must assume the calibration position as shown in the photo below.



- a) Your feet should be aligned as they will be in for your swing.
- b) Stand erect with both arms hanging straight down and glove hand in a fist by your thigh with the back of your glove hand pointing at your target (90° to the direction of your target).
- c) The club should be leaning lightly against your hand. This ensures that there is no interference between the club and the hand sensor.



- d) Shoulders and hips should both be parallel to the direction of your shot.

3. Hold the calibration position until the audio signals that the calibration is complete.

You will need to repeat this procedure at the beginning every new session, and whenever you aim for a new target.

## Capturing Your First Swing

If this is your first time using a K-VEST, you may choose to capture a practice swing to familiarize yourself with the use of your K-VEST and the KINESYNC software. Be sure the sensors are calibrated before attempting to capture a swing.

**QUESTION - TURN THIS INTO FULL "QUICK START" walk through - new instructor, new player... calibrate, capture swing...**

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### To capture a swing:

1. Press **1** on the laptop keyboard (or click Collect on the upper toolbar of the KINESYNC window) or to enter Collect mode.
2. Calibrate (appropriate here – since they just calibrated?)
3. Press **3** on the keyboard (or click the Capture button in the KINESYNC window) to initiate a recording.

An audio signal starts a countdown for you to get in position and prepare to swing. Wait for the countdown to say “Swing when ready!”

- a. When signaled, take a deep breath to focus and then swing.

The recording stops automatically after 5 seconds.

You can repeat this procedure as often as you want until you get a swing that you want to save.

## Analysis Overview

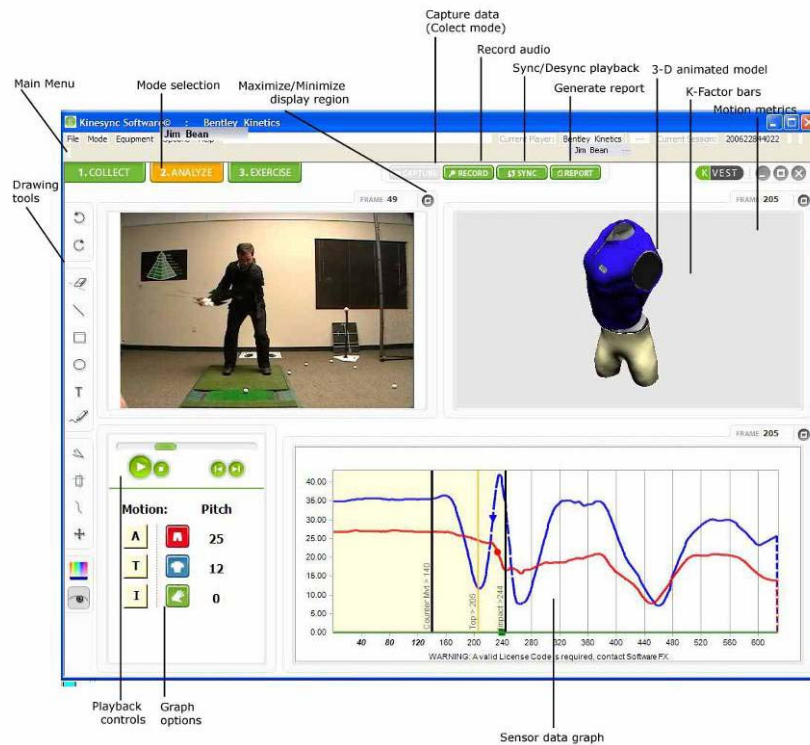
[Section that provides a quick overview of analysis features.]

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### *Roadmap of the KINESYNC Display*

If this is your first time using the KINESYNC software, you may find it helpful to familiarize yourself with the parts of the display and the different controls that allow you to manipulate the display.

The KINESYNC screen is divided into regions for each type of information you work with. All KINESYNC information regions and controls are available in Analyze mode, as shown below. The other modes provide a subset of this information.



## Getting Help

### To view the documentation:

Choose **K-Vest Help** from the **Help** menu on the KINESYNC software menu bar.

## Try a Simple Exercise

[a section that walks users through creating and running an exercise – probably for alignment at address.]

## Ending a Session

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### Exiting KINESYNC

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#### To exit the KINESYNC software:

Choose **File > Exit** from the menu bar.

If you have not yet saved your current session, the KINESYNC software will always prompt you to save your work before exiting.

### Recharging the Sensors

The K-Sensor batteries last approximately 5-9 hours between charges.

When the upper green light on a wireless sensor is blinking, it means the battery needs to be charged.

[photo - or drawing - of sensor with lights]

Each wireless sensor pocket has a hole that allows you to plug the charger directly into the wireless sensor without removing it from the pocket. The charger can be plugged into any standard wall socket. The 1-to-3 connector allows you to recharge all three sensors at the same time.

[insert photo of sensors plugged into charger cable with splitter]

You should recharge the sensors for at least 1 hour after each use. You can leave the sensors plugged in to recharge whenever your K-VEST is not in use.

**charge at end of day .. when not in use, plug in to charge**

## More Information

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[this section will refer users to the online help, and also to information and webinars on K-WEB]