

The Elder Scrolls V: Skyrim Stamina Combat Overhaul

A Senior Project Presented to  
the Faculty of the Liberal Arts and Engineering Studies Department  
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In Partial Fulfillment  
of the Requirements for the Degree  
Bachelor of Arts

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## Introduction and Deliverable

The Elder Scrolls V: Skyrim is a role playing game released by Bethesda Softworks in 2011 that has received numerous accolades, awards, and an aggregate review score of 94/100<sup>i</sup>. It's known for its massive real-time world with numerous characters to engage with, locales to explore, and stories to uncover and affect, but has also been criticized by professional game reviewers and gamers alike for its awkward<sup>ii</sup> and unengaging<sup>iii</sup> combat. The aim of this project was to modify Skyrim's combat system to be an enjoyable and engaging part of the game, as opposed to an element that drags it down as a whole. Compared to other role playing games, Skyrim's combat system falls flat, lacking the depth of semi turn-based games like Bioware's Dragon Age: Origins or the precision of From Software's Dark Souls. This is in large part because the structure of Bethesda's Elder Scrolls and Fallout role playing games are very different from these examples, so much so that they're considered to be in their own subgenre of role playing game. This difference in structure means that Bethesda cannot easily pull elements from games like Dark Souls or Dragon Age: Origins. It doesn't have a party system where you issue series of commands to manage multiple characters, like in Dragon Age: Origins, and the game wasn't designed with constant player deaths in mind like Dark Souls was, so a combat system like Dark Souls's that forces the player to learn the details of how their weapon works or die trying would be much more punishing, as players could lose significant amounts of progress for a small lapse in concentration. However, looking at Dragon Age: Origins and Dark Souls, it became clear that one of the biggest common threads they had that Skyrim lacked were consequences for the player's resource management. Both Dragon Age: Origins and Dark Souls have negative consequences for players wasting their resources, usually in the form of needing to reload the game or restart an area, and positive ones for optimizing them, which is a design concept that could be implemented into Skyrim. My solution was to add consequences that were slightly less severe than Dragon Age: Origins's or Dark Souls's, which I did by reworking how Skyrim's "stamina" statistic, which measures the character's

physical fatigue, is utilized in combat. Previously stamina was only consumed when characters performed a special "power attack," which is an attack with a wind-up that deals more damage, or when they "sprinted," after which stamina would slowly regenerate. In my project, stamina was changed so that every swing of a weapon consumes stamina, and so that when a character drops to zero or less stamina as a result of a weapon swing, they have a high chance of dropping their weapon on the floor, significantly setting them back in combat. Additionally, trying to sprint and running out of stamina causes that character to trip. These new mechanics have been applied to the player and to all the characters the player encounters, forcing players to carefully manage their attacks and movement to avoid falling into a disadvantage in combat, but also giving them an opportunity to manipulate the mechanics to give themselves the edge. Players can't treat combat like a mindless exercise in clicking because doing so will leave them unarmed and scrambling to stabilize. Needing to gauge how much stamina they have forces the player to engage with the combat, and makes it feel less like a thoughtless chore and more like an activity that requires strategic thought.

### Literature and Technology Review and Technology Overview

Before starting this project, I did research to see if there were any other modifications, also referred to as "mods," that were created with similar goals in mind. From research I found that there were two primary sources for mods, the Steam Workshop, which is part of the same software platform Skyrim is on, so all Skyrim players have easy access to it, and the Skyrim Nexus Mods site, which has retained popularity in part due to its history hosting mods for other Bethesda role playing games, including The Elder Scrolls III: Morrowind, The Elder Scrolls IV: Oblivion, Fallout 3, and Fallout: New Vegas. This information was gathered by reviewing forums used for discussion of Skyrim, some of the largest being the Skyrim Subreddit<sup>iv</sup>, the Skyrim GameFAQs page<sup>v</sup>, The Nexus Forums<sup>vi</sup>, and TES Alliance<sup>vii</sup>. I found several mods that tried to address the same problem, but none that did so in

the same way that I did, and all to seeming various degrees of success. Some of the most prominent mods that attempted to do so were DUEL- Combat Realism<sup>viii</sup>, which adjusts the artificial intelligence of the game's characters, makes timing blocks and attacks more important, makes more player actions consume stamina, and substantially increases damage taken, Ultimate Combat<sup>ix</sup>, which gives enemies more combat abilities, emphasizes blocks and timing, implements changes to the artificial intelligence of the game's characters, and makes weapon swings cost stamina, and Deadly Combat<sup>x</sup>, which largely focuses on adjustable values to modify how much damage players and enemies take by modifying the effectiveness of armor and weapons. While these are quite popular mods, none of them are universally accepted by the community as an improvement or a fix to Skyrim's combat, and none of them utilize the consequences that I came up with. Because there was nothing that seemed to implement the ideas I had, I did further research on the best tools for the modification of Skyrim. Using the same sites I did to find the most popular sources for mods, I did research on tools that could be used to mod Skyrim. Through my research, the primary tool that seemed to be in use was the Creation Kit, a modified version of the software used to make Skyrim that was released by the game's developers to the community for free use. Further research showed that the Creation Kit used a proprietary scripting language called papyrus. I also found another resource, the Skyrim Script Extender, which acted as a free function library for papyrus. Throughout the course of my project, I used the same sources' modding subforums to find answers to questions I had about how the Creation Kit, papyrus, and the Skyrim Script Extender worked, and through them I also found the Creation Kit Wiki<sup>xi</sup>, a wiki site dedicated to the tools used in the Creation Kit, which was a significant reference for methods in papyrus, and which also provided substantial tutorials that helped me create the skeleton for my own mod.

## Design and Implementation

From my research, I knew that the Creation Kit was the most versatile and well documented way to add to or modify Skyrim, so my first thought was to look into using the Creation Kit to directly add code that would run alongside the rest of the game, forcing all characters to operate by my new rules, but after some investigation, I found out that the Creation Kit doesn't support the direct addition of code to the game. I then did additional investigation to see if there was a way to apply new code to all characters in the game, as this would still force characters to act by my new rules. While there was no way to apply code to all characters other than manually applying it to them one at a time, a few of the sources I used recommended a workaround that would apply the code to all relevant characters dynamically. This workaround utilized the Creation Kit's magic system. Magic is organized by the "Magic Effect", which is what the magic does to whatever target it is applied to, and the "Spell," which acts as a delivery mechanism for the magic effect. My mod uses several spells and magic effects to make its changes, the first spell being "cloak", which targets all characters within a specified range of the character who casts the spell. I made a magic effect to be applied by the cloak Spell that forces all characters under its effects to cast a second spell. This second spell targets the caster, which in this case is every character who is hit by the first spell. The magic effect for the second spell forces characters to continually cast a third spell on themselves. The magic effect corresponding to the third spell applies the code<sup>xii</sup> that I've written to all characters targeted by the spell. The player character is forced to always cast the first spell (with no sound or animations), causing all characters within range to cast the second spell on themselves, which then forces them to cast the third spell on themselves. effectively applying the new rules I've made to everyone within combat range of the player character. The player character is also forced to cast the second spell, so that the player is also forced to abide by the new rules. These spells were heavily based off the guide Dynamically Attaching Scripts<sup>xiii</sup>, specifically the subsection Applying Scripts to Actors. The new rules force characters to lose stamina

every time they swing their weapon, with the amount of stamina lost tied to the weight of their weapon, and whenever a character's stamina drops to zero, a random number between one and ten is generated, and if the character's skill in using that weapon divided by fifteen plus one is less than the randomly generated number, they drop the weapon they swung in front of them. If one plus their skill over fifteen is greater than or equal to the randomly generated number, the character holds on to the weapon they swung. The script detects when a weapon is swung by constantly checking to see when the character performs a weapon swing animation, and when they do it runs a check to see if this caused the character's stamina to drop to zero. The code also implements a check to see what kind of weapon the character is using, so that it knows which skill to use. The Skyrim Script Extender was introduced at this point, as the basic papyrus library of functions doesn't offer a straightforward way to check what weapon the player is using, but the Skyrim Script Extender's expanded function library did. My mod makes its changes to sprinting by constantly checking to see if the character is sprinting, and if they are if their stamina is at zero. If it is, then the character is knocked down and set to "Ragdoll." Ragdolling is when a character falls to the ground like a normal object would, so when they trip they fall and then have to wait a few seconds to get up. This mod also makes sprinting cost significantly more stamina to reflect the advantage movement gives in combat, and makes stamina regenerate significantly faster, as leaving the stamina regeneration rate at the game's base level forced players to hang back for significant periods of time waiting for their stamina to regenerate, which is not a very entertaining experience. This allowed me to implement the changes I wanted to.

### Analysis and Verification of Success

Early testing of the mod was conducted on my personal laptop and was overseen by me. A total of five people participated in testing, which consisted of playing a level one character set immediately before the Bleak Falls Barrow dungeon, being asked to progress as far as they could in the dungeon in

fifteen minutes, and taking a short anonymous questionnaire<sup>xiv</sup> after they had finished playing. I chose to use a level one character so that players had a blank slate to work with, and didn't feel forced into a playstyle that took advantage of a leveled up character. Bleak Falls Barrow was chosen because it's an early dungeon that most Skyrim players will have already gone through in their own playing experience because of its importance in the game's early story, because it is designed to be accessible for low level characters, and because it presents a fair amount of enemy variety in the form of bandits, undead, spiders, and animals, so players would have to vary their strategy based on which kind of enemy they were fighting. The questionnaire indicated that two of the five testers had no prior experience playing Skyrim, that one had between 40 and 100 hours of experience, that another had between 100 and 200 hours of experience, and that another had over 200 hours of experience. The testing session was structured with the expectation that players already had at least some background with Skyrim, and as a result the two testers with no prior experience were unable to comment on how they felt the mod affected the game, as they had no basis for comparison. Questions were asked on a one to ten scale, with ten being yes, one being no, and five being neutral. The three testers with prior Skyrim answered the question "Did the mod make combat feel more engaging than the original game's combat," with an eight, an eight, and a nine, indicating that the mod was a success in term of getting the player more engaged. When asked "Did the mod make combat feel more fun than the original game's combat?" testers responded with a five, an eight, and a seven, indicating that testers mostly had more fun, and at the very least did not have less fun. There were a few issues encountered in the testing session, namely that certain weapons were heavy enough that one swing of them could drop a player's stamina to zero, which indicates that the cost per swing may be too high, as players only had access to starting weapons, and while gating access to heavier weapons based on stamina later in the game is certainly an interesting idea, players should be able to use the full suite of starting level gear from level one, as they are often still feeling out what kind of character they would like to play, and



should be able to use the starting set of weapons to experiment without too dire of consequences.

Another tester commented that they don't think they saw an enemy drop a weapon. While bandits have been tested and confirmed to drop their weapons when appropriate, additional tests may be conducted on the "Draugr" enemies, as they may not be affected by the mod the same way that human characters are. The testers had differing opinions on the combat, with some claiming additional difficulty, and some claiming that the difficulty was about the same. These tests indicate that the changes made do make combat more engaging and overall generally more enjoyable, which was the primary purpose of this project. Further testing is still needed, but current results are positive.

### Future Work

Testing also outlined several elements that will be of interest for future work. The most important of which is to properly balance the weights of weapons to make sure that the stamina costs make sense with the weapon in question, but there are also several UI elements that I intend to incorporate. One of these is a notification that a weapon may be dropped from a single attack (or power attack) when the player is at full stamina, another is recognizing when a player has "favorited" a weapon, so that if dropped, when it is retrieved it goes back into the favorited category instead of requiring the player to re-favorite it whenever they drop it. Another future change is to incorporate a mechanic that points players to where their dropped weapons are, so they don't have to search all over the map to find them after a fight. In the further future, I intend to look into additional changes, like items or spells that make it harder to drop weapons or trip when sprinting, and re-balancing of items that damage fatigue, which with the changes I've made are much more powerful than they were in the base game. I'd also like to create custom animations for weapon drops and sprinting trips, which should enhance player immersion and make what's happening more clear for players who are unfamiliar with my mod and the changes it makes.

## Societal Impacts

The primary implications my project has are largely related to the subgenre of Bethesda role playing games, but the general finding that the lack of consequence is what causes lack of engagement could be applied to a much wider spread of games. Additional Bethesda role playing games (whether or not they are actually published by Bethesda) can implement the changes I made in any title that utilizes the mechanics that my changes rely on, stamina, weapon swings, and sprinting, to create a more engaging experience, which should mean that players will feel less like they have to force themselves through the combat to enjoy the rest of the experience, and hopefully will view it as another positive element the game has to offer. Other games that rely on mechanics players find unsatisfying may also benefit from incorporating more consequences into gameplay, making players more willing to play not only with those mechanics, but to see the other aspects of the game as well.

## Conclusion

This project was created with the intent of making the melee combat of The Elder Scrolls V: Skyrim engaging and enjoyable. I started by looking at other games in different role playing game subgenres, and identified that an element they had in common that Skyrim lacked were significant consequences for player actions in combat. With some brainstorming, I thought of the idea of modifying the way the stamina statistic worked as a way to implement these consequences. I then followed up on this by doing research to see where mods for Skyrim could be found, if anyone had made any mods to address the same issues I had, and if those mods were successful. Upon finding that no mods were accepted by the majority of the community as a solution to the problem, I looked into the tools I would need to make my own mod, and did research into the Creation Kit and Skyrim Script Extender. Once I started making the mod, I used various forums and the Creation Kit wiki to figure out how to implement the changes I wanted to make. Once I had a working version, I did some

preliminary tests, which came back mostly positive and at worst neutral. From those tests I've been able to identify several features I want to implement in the future, as well as find a few bugs I was not aware of. The ideas behind this mod could go on to influence other games in the genre to incorporate similar design ideologies, and potentially make them more enjoyable games for it. Incorporating consequences into Skyrim will make the game a better experience by making the combat more engaging and enjoyable, and by extension making the rest of what the game has to offer be more accessible.

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## References

- <sup>i</sup> "The Elder Scrolls V: Skyrim." *Metacritic*. Web. 01 June 2016. <<http://www.metacritic.com/game/pc/the-elder-scrolls-v-skyrim>>.
- <sup>ii</sup> Onyett, Charles. "The Elder Scrolls V: Skyrim Review - IGN - Page 3." *IGN*. 10 Nov. 2011. Web. 01 June 2016. <<http://www.ign.com/articles/2011/11/10/the-elder-scrolls-v-skyrim-review?page=3>>.
- <sup>iii</sup> Magnus. "How Could Skyrim Get Away with Such Clunky Combat Mechanics?" *NeoGAF*. 08 June 2013. Web. 01 June 2016. <<http://www.neogaf.com/forum/showthread.php?p=75014727>>.
- <sup>iv</sup> <https://www.reddit.com/r/skyrim/>
- <sup>v</sup> <http://www.gamefaqs.com/pc/615805-the-elder-scrolls-v-skyrim/faqs>
- <sup>vi</sup> <https://forums.nexusmods.com/>
- <sup>vii</sup> <http://www.tesalliance.org/>
- <sup>viii</sup> LogRaam. "Duel - Combat Realism at Skyrim Nexus - Mods and Community." *Skyrim Nexus - Mods and Community*. 20 Nov. 2015. Web. Mar. 2016. <<http://www.nexusmods.com/skyrim/mods/2700/>>.
- <sup>ix</sup> Ttkl1. "Ultimate Combat at Skyrim Nexus - Mods and Community." *Skyrim Nexus - Mods and Community*. 14 Jan. 2016. Web. Mar. 2016. <<http://www.nexusmods.com/skyrim/mods/36006/>>.
- <sup>x</sup> Borgut1337. "Deadly Combat at Skyrim Nexus - Mods and Community." *Skyrim Nexus - Mods and Community*. 2 Aug. 2013. Web. Mar. 2016. <<http://www.nexusmods.com/skyrim/mods/5485/>>.
- <sup>xi</sup> "Main Page." *Creation Kit*. 12 Nov. 2012. Web. Mar. 2016. <[http://www.creationkit.com/index.php?title=Main\\_Page](http://www.creationkit.com/index.php?title=Main_Page)>.
- <sup>xii</sup>

Scriptname WeaponAndSprintRebalanceScript extends activemagiceffect

Actor MySelf  
Float Stamina

```
Event OnEffectStart(Actor akTarget, Actor akCaster)
    MySelf = akTarget
    Stamina = MySelf.GetActorValue("Stamina")
    RegisterForSingleUpdate(0.001)
    RegisterForAnimationEvent(MySelf, "weaponSwing")
    RegisterForAnimationEvent(MySelf, "weaponLeftSwing")
EndEvent
```

```
Event OnUpdate()
    Stamina = MySelf.GetActorValue("Stamina")
    if( MySelf.isSprinting()
        MySelf.DamageActorValue("Stamina", (MySelf.getActorValue("InventoryWeight") as Float) / 100)
        if(Stamina <= 0)
            MySelf.PushActorAway(MySelf, 0.0)
            MySelf.ApplyHavokImpulse(0, 0, 0, 0)
```

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```

    endif
else
    MySelf.RestoreActorValue("Stamina", 0.85)
endif
RegisterForSingleUpdate(0.001)
RegisterForAnimationEvent(MySelf, "weaponSwing")
RegisterForAnimationEvent(MySelf, "weaponLeftSwing")

EndEvent

Event OnEffectFinish(Actor akTarget, Actor akCaster)
    UnregisterForUpdate()
EndEvent

Event OnAnimationEvent(ObjectReference akAggressor, String detectedAnimation)
    if(detectedAnimation== "weaponLeftSwing")
        Stamina = MySelf.GetActorValue("Stamina")
        Weapon MyRightWeapon = MySelf.GetEquippedWeapon(false)
        Weapon MyLeftWeapon = MySelf.GetEquippedWeapon(true)
        Float WeaponWeight = MyLeftWeapon.GetWeight() as Float
        MySelf.DamageActorValue("Stamina", 10.0 + WeaponWeight as Int)
        Stamina = MySelf.GetActorValue("Stamina")
        if (Stamina <= 0)
            Int random = Utility.RandomInt( 1, 10)
            Int chance = 1 + ((MySelf.GetActorValue("OneHanded") / 15) as Int)
            if (chance < random)
                MySelf.UnequipItemEx(MyLeftWeapon, 2, false)
                MySelf.DropObject(MyLeftWeapon, 1)
            endif
        endif
    elseif(detectedAnimation== "weaponSwing")
        Stamina = MySelf.GetActorValue("Stamina")
        Weapon MyRightWeapon = MySelf.GetEquippedWeapon(false)
        Weapon MyLeftWeapon = MySelf.GetEquippedWeapon(true)
        Float WeaponWeight = MyRightWeapon.GetWeight() as Float
        String MyWeaponType = "OneHanded"
        if(MyRightWeapon.GetWeaponType() > 4)
            MyWeaponType = "TwoHanded"
        endif
        MySelf.DamageActorValue("Stamina", 10.0 + WeaponWeight as Int)
        Stamina = MySelf.GetActorValue("Stamina")
        if (Stamina <= 0)
            Int random = Utility.RandomInt( 1, 10)
            Int chance = 1 + ((MySelf.GetActorValue(MyWeaponType) / 15) as Int)
            if (chance < random)
                MySelf.UnequipItemEx(MyRightWeapon, 1, false)
                MySelf.DropObject(MyRightWeapon , 1)
            endif
        endif
    endif
EndEvent

```

<sup>xiii</sup> Chesko, Egocarb, Sagitarius22, Brisid, Jonwd7, and Fg109. "Dynamically Attaching Scripts." *Creation Kit*. 20 Feb. 2015. Web. Mar. 2016. <[http://www.creationkit.com/index.php?title=Dynamically\\_Attaching\\_Scripts](http://www.creationkit.com/index.php?title=Dynamically_Attaching_Scripts)>.

<sup>xiv</sup>

**LAES 462 Senior Project: The Elder Scrolls V: Skyrim Combat Stamina Overhaul**  
By Richard Rattner

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On average, roughly how many hours a week do you play video games?

> 2                      2-5                      5-10                      10-20                      20+

How many hours of prior experience do you have with The Elder Scrolls V: Skyrim?

0-10    10-20                      20-40                      40-100                      100-200                      200+

NO

NEUTRAL

YES

Did the mod make combat feel more fun than the original game's combat?

1    2    3    4    5    6    7    8    9    10

Did the mod make combat feel more engaging than the original game's combat?

1    2    3    4    5    6    7    8    9    10

Did the mod make you reconsider your strategy in approaching combat? If so, how so? If not, what do you think might?

1    2    3    4    5    6    7    8    9    10

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Did the mod make combat feel unbalanced in favor of the player?

1    2    3    4    5    6    7    8    9    10

Did the mod make combat feel unbalanced in favor of enemies?

1    2    3    4    5    6    7    8    9    10

If the mod felt in favor of the enemies or the player, briefly elaborate on what tipped the balance.

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Was playing with the mod, in general, an improvement over the original system?

1    2    3    4    5    6    7    8    9    10

Are there any additional features you think the mod might have benefit fitted from? Any features that should be cut?

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Did the mod break any other aspects of the game? If so which one(s)?

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If you started a new game of Skyrim, would you use this mod?

1    2    3    4    5    6    7    8    9    10

Please add any additional comments or thoughts below. If you ran into any bugs, please mention them here.

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Thanks for trying the mod and taking the survey!