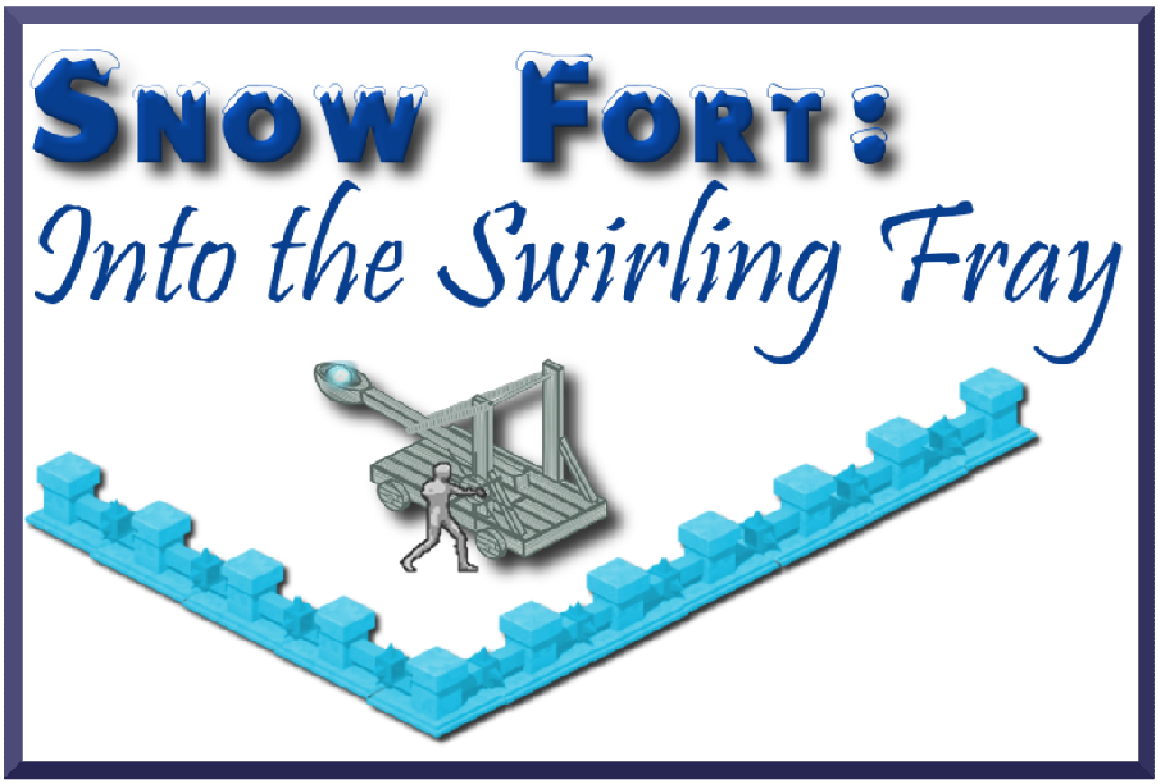
Snow Fort: *Into the Swirling Fray*



A Proposed Game
Presented by
Pazzam[tm] Studio
To Potential Backers of the

Kickstarter.com Campaign entitled:

Kringle's Polar Challenge
Part 2: Snow Forts and Players

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Building and Equipping Snow Forts

At Levels 1 and 2, Snow Forts will already be built depending on the scenario.

Building a Snow Fort

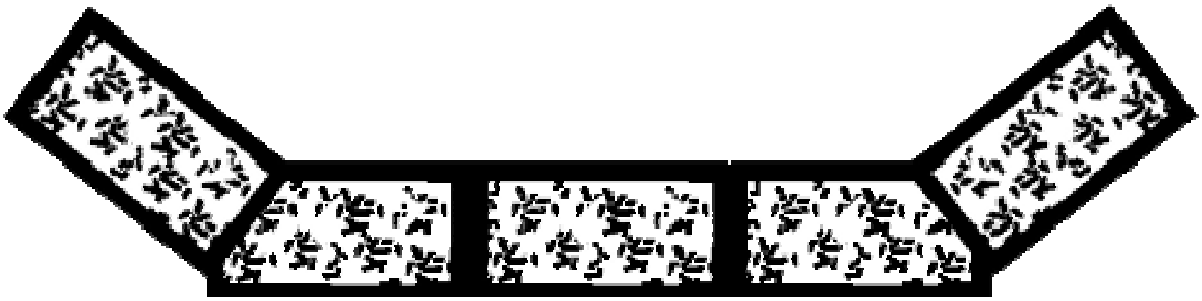
A Snow Fort is built from snow blocks that are approximately 6 inches high, 12 inches wide and typically 2-4 inches deep at lower levels of play.

Blocks can be stacked. The maximum number of layers is dependant upon the game level.

On average snow covered terrain, it takes 3 square feet of snow to make 1 block. Thus, the size of a Snow Fort may be limited by allowable building time, the availability of snow and the size of the field.

Each game level and victory condition may specify the specific snow fort design(s) that must be used.

For example, a "Base Fort" design for a small or medium sized field at the community league level might be 6 blocks high, by 5 blocks wide and one block deep as shown in the top-down view below.



Assuming snow is available, an average builder can make 1 block every 3 seconds, and place that block in 1 second. If snow is not available it must be hauled from a location where it is. As areas are "used up" players must haul snow (or blocks) from other locations to complete a snow fort.

Equipping a Snow Fort

Snow forts can shelter various types of equipment, including things like siege engines (snowball throwers that function like catapults, trebuchets etc.), urns of hot chocolate for recovering stamina, spare ammo pouches, and etc.

Siege engines are typically manned by builders who use them to hurl snow balls at opponents' snow forts, or at opponents.

Equipment for a snow fort can be purchased at the Trading Post. This is detailed in a later section.

Destroying a Snow Fort

Snow Forts are destroyed by "Impact." A 4"x6"x12" snow fort block has 100 structural points. One "zinged" standard snowball will damage a block for 1 structural point.

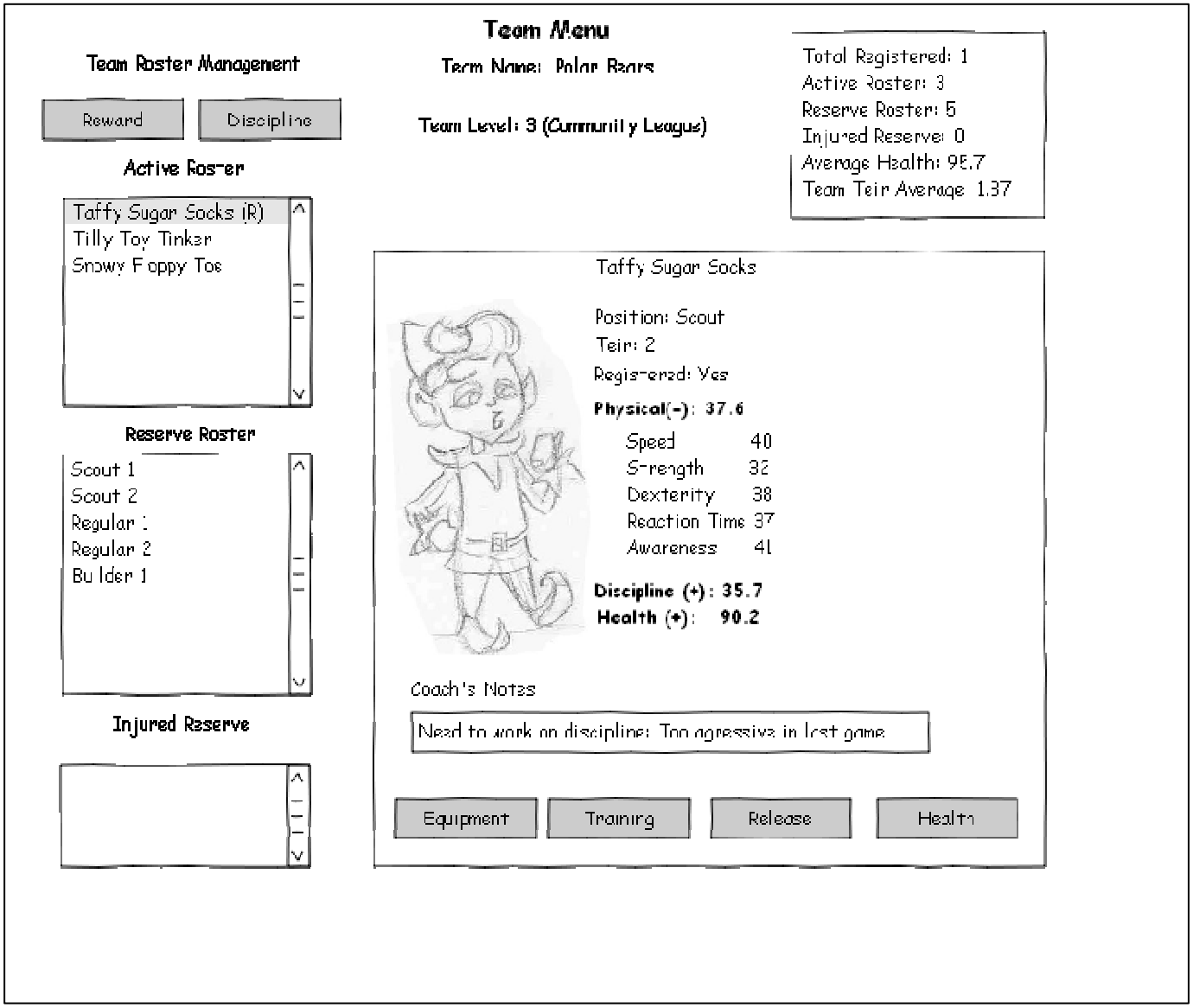
Thrown snowballs do not damage blocks, and lobbed snowballs have a chance of "repairing" a block for 1 point.

Impacts by items such as huge snowballs, player's bodies, and other equipment will be computed by the physics engine based on velocity, mass and material of a particular object.

The effects of impact and structure will be tuned for balance during development and play testing.

Player Details and Point Structure

The following screen mock-up shows how a coach might see and adjust the players on his team.



Player Attributes

Players, being AI Characters, have collections of attributes which indicate how well they can perform specific in-game activities.

Most attributes have a score range of 0-100, which is generally indicative of a percentage of how "good" it is. Players are divided into Tiers based on their average scores of physical attributes.

Average Physical Score	Player Tier
10 – 15	1
16 – 53	2*
54 – 82	3
83 – 100	4

* Maximum Player Tier for Levels 1-3 (i.e. initial release).

There are different ways attributes can be affected: Training, Aging and Playing.

Trained Attributes are changed as experience points are assigned by the coach.
Aging attributes change over seasons. (This will not be obvious in the first three levels).
Playing attributes vary during the game play itself.

Players have three categories of attributes: Physical, Discipline and Health. These are explained below.

During play there are two ways to consider attributes: Base and Current. Base Attributes have maximum values and are adjusted by training, age or play as defined below. Current Attributes are the result of adjustments to the Base Attribute during the game.

The game engine on the server will use the points in the various attributes to determine what adjustments to make to the physics engine.

Physical Attributes

The physical attributes are Strength, Control, Speed, Reaction Time and Awareness.

Strength, Control, Speed and Awareness can be changed by Training Attributes.
Reaction Time can be changed by the Age Attribute.

Strength

Raw power, amount someone can "bench press."

Current Strength = (Base Strength * (Stamina * (Percentage of Endurance Remaining))) – Injury Factor – Encumbrance Factor

Notes: Stamina and Injury Factor are discussed later.
Encumbrance is a factor of both the mass and the shape of an object. Carrying a large bulky object will give a player less control. Each item's Encumbrance will be adjusted as its effect on game play is observed during development.

Impact of Current Strength on Throwing a Snowball

Maximum snowball throw distance = 200 ft @ Strength of 100

Zing:

30% of Maximum Range (+2% per Player Tier)

Throw:

75% of Maximum Range (+1% per Player Tier)

Lob:

Anything Over 75% of Max

Experience Points

It costs 1 Experience Point per Player Tier to Increase 1 Point of Strength.

When the coach assigns strength experience, a short "weight lifting" animation plays. Animation varies.

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Control

Ability to Focus Strength or Speed (Fine and Gross Motor Control).

Current Control = (Base Control * (Stamina * (Percentage of Endurance Remaining))) – Injury Factor – Encumbrance Factor

Effect on Accuracy When Throwing a Snowball

The Value is the % chance to hit with a throw
Zing is 25% less Accurate
Lob is 50% less Accurate
Control also impacts the ability to aim snowball throwing items (as defined in the individual item).

Impact on Movement

The Value is the % chance to maintain footing when there is a change of terrain or change of speed or direction. (Think Scooby-Doo in terms of animation when control fails.)

Impact on Building Accuracy

The Value is indicative of how "solidly" and quickly a Snow Fort is built.

Impact on Repair

When a Builder repairs a mechanism, control will impact the speed and effectiveness of the repair as defined by the mechanism.

Experience Points

It costs 2 experience points per Player Tier to increase 1 point of Control.

When the coach assigns control experience, a short "jump rope" animation plays. Animation Varies.

Speed

Speed is the maximum velocity at which a player can move.
The speed value also indicates how quickly a player can throw snowballs.

Current Speed = (Base Speed * (Stamina * (Percentage of Endurance Remaining))) – Injury Factor – Encumbrance Factor

Impact of Current Speed on Movement

10 Speed
- 4 mph Run
- Throw 1 Snowball per 2 Seconds

100 Speed
- 10 mph Run
- Throw 1 Snowball per Second

Use liner interpolation to compute velocity and throw rate for speeds between 10 and 100.

Adjustments to Speed

Dash – +50% Run uses double Stamina
Run – Movement as Interpolated
Jog – ½ of Run uses ½ Stamina
Walk – ¼ of Run uses ¼ Stamina

Experience Points

It costs 1 experience point per Player Tier to increase 1 point of Speed.

When the coach assigns speed experience, a short "sprinting" animation plays. Animation Varies.

Reaction Time

Reaction time is analogous to "Torque" i.e. it is how quickly a player can change his current action to his desired action. It factors things such as twisting, turning, and bursts of speed.

> Current Reaction Time = (Base Reaction Time * (Stamina * (Percentage of Endurance Remaining))) – Injury Factor – Encumbrance Factor

Does not impact physical average for Player Tier calculations.

Base Reaction Time:

1st Season – 5th Season: 99 pts
6th Season – 10th Season: 95 pts
11th Season – 15th Season: 85 pts
16th Season – 20th Season: 70 pts
Mandatory Retirement at end of Season 20

(Points are per Registered Season. Once Registered, Players may not be unregistered in subsequent seasons.)

Effect on Snowball Throwing (Current Reaction Time)

% chance to duck a throw
Zing 25% harder to duck
Lob 50% easier to duck

Make 1 Snowball per Second * Current Reaction Time Factor

Time to accelerate or change direction will be determined by the Current Reaction Time value.

Reaction time cannot be changed with experience.

Awareness

Cone (shape) of Reaction within which a player can respond to in-game objects (other players, snowballs, terrain features etc.).

> Current Awareness = (Base Awareness * (Stamina * (Percentage of Endurance Remaining))) – Injury Factor + Intelligence Factor – Encumbrance Factor

Awareness Area

> An awareness area is a cone shape that begins at the player and extends outward in the direction the player is facing.
>
> Cones Shapes:
>
> 60^0 – Scouts
> 90^0 – Regular
> 120^0 – Builders
>
> As the cone narrows, the distance of awareness increases, so the total awareness area (number of square feet) remains the same.
>
> Current Score of 10: Total Awareness Area is 450 square feet (10 Yards with a 90 degree cone).
> Current Score of 100: Total Awareness Area is 11,250 square feet (50 Yards with a 90 degree cone).

Notes

> At higher Levels of play (beyond first three Levels):
> Add distinction between offensive and defensive cones.
> Wider awareness ranges, different shapes.
>
> Items can alter Awareness area and shape.

Discipline Attributes

Discipline Attributes can begin in any range, from 10-100 and do not impact Player Tier averages.

The discipline attributes are Intelligence, Disposition and Morale. Morale is not a factor in these first three Levels, so is not further explained here.

Intelligence can be changed by both Training and Age Attributes.
Disposition can be changed by the Training Attribute.

Intelligence

Players begin with a randomly generated intelligence score between 40 and 60.

Intelligence impacts awareness in the following ways:

- Determines the number of objects within a Player's cone of awareness the player can react to.
- Adjusts the player's current awareness score up or down.

Number of Objects in Awareness Cone

A player's AI can react to only a limited number of objects within its cone of awareness. The Player's intelligence score determines that limit.

A player can react to 1 Object per 10 Points of Intelligence + 2 Objects per Player Tier.

By default, the player will react to the closest object first, but the coach can override this by assigned priorities.

Influences Current Awareness Score

The following table describes how Intelligence influences Current Awareness.

Intelligence	35	40	45	50	55	60	65
Adjustment	-6	-4	-2	0	+2	+4	+6

Intelligence is impacted by both age and experience.

Age Influence on Intelligence

1st Season – 5th Season: +1 (At the end of season 1)
6th Season – 10th Season: +2 (At the end of season 6)
11th Season – 15th Season: +3 (At the end of season 11)
16th Season – 20th Season: +4 (At the end of season 16)

Experience Points

It costs 2 experience points per Player Tier to increase 1 point of Intelligence.

When the coach assigns intelligence experience, a short "book reading, head scratching, light bulb kind of" animation plays. Animation Varies.

Disposition

Disposition determines how defensive or aggressive a player is. Players begin with a random disposition score of between 40 and 60. This cannot be changed during the first three levels of play.

A score of 40 is "Defensive," a score of 50 is "Balanced," a score of 60 is "Aggressive."

Builders should be defensive. Regulars should be balanced. Scouts should be aggressive.

Disposition is a key factor in determining how an AI will respond to an object within its awareness cone. For example, when aware of an opposing player, the AI often needs to choose between "*Pursue*" and "*Stand/Evade*". An aggressive player will choose *pursue* more often and a defensive player will choose *stand/evade* more often.

A coach can override a player's natural disposition by assigning objective priorities.

The weight of disposition in AI behavior will be determined during development and play testing.

Health Attributes

Health attributes are, as may be inferred from the name, attributes which determine how healthy a player is, both short term and long term.

Health attributes include: Endurance, Stamina, Resilience, Player Temperature and Injuries.

Stamina changes only during Play. It goes up and down during a game.
Endurance can be changed by Training.
Resilience can be changed by Age.
Player Temperature changes only during Play.
Injuries change during Play. Healing of injuries may also be effected between games.

[*Ian Leino's concept game characters in a winter wonderland.*]

Endurance, Stamina and Resilience

Endurance, Stamina and Resilience are closely linked.

Endurance is the total amount of energy a player has during a game. Stamina is the usable percentage of available Current Endurance. Resilience is how quickly you can "bounce back" after having used Stamina and Current Endurance.

Each time the player moves, throws, lifts etc. it takes at least one point of Stamina per 3 seconds. Each time Stamina drops 10 points, one point of Current Endurance is subtracted.

Resilience is the number of points added back into Stamina and Current Endurance. Current Endurance is only recovered with Resilience.

Resilience is a function of age:

Season	1st – 5th	6th – 10th	11th – 15th	16th – 20th
Time to Recover 1 Point of Stamina	5	6	7	8
Time to Recover 1 Point of Endurance	25	30	35	40

These numbers will probably be adjusted during development and play testing.

As Current Endurance goes down, it impacts all physical attributes.

A Player begins with a random Base Endurance score of between 40 and 60.

Experience Points

It costs 1 Experience Points per Player Tier to Increase 1 Point of Endurance.

When the coach assigns Endurance experience, a short "Road Work" animation will play. Animation Varies.

Player Temperature

Player Temperature is a function of environmental temperature (determined per game). Player Temperature is on a continuum between 0 and 100, where 50 is "Average" 25 is "Cold" and 75 is "Hot."

At an environmental temperature of 28^0 F:

When standing still, a player looses 1 point of Player Temperature per 10 seconds.
When walking a player looses 1 point of Player Temperature per 20 seconds.
When jogging a player neither gains nor looses.
When running a player gains 1 point of Player Temperature per 20 seconds.
When dashing a player gains 1 point of Player Temperature per 10 seconds.

(*These numbers will be adjusted at higher levels of play for lower temperatures.*)

Making snowballs or snow fort blocks with bare hands, doubles Player Temperature drop rate to 1 point per 5 seconds.

Building a snow fort wall by hand will increase Player Temperature 1 point per 10 seconds.

These numbers will likely be adjusted during development and play testing.

Injuries

Minor:
All Minor Injuries: No Recovery While Moving, Throwing etc.

% Endurance Remaining = Current Endurance / Base Endurance * 100

Performance Injuries

Chance of Performance Injury:

Check each minute per Player: 100% - (% Endurance Remaining)

Types of Performance Injuries:

Strained Shoulder: 3 points Strength, 3 points Control
Sore Hammy: 3 points Speed, 3 points Control

Collision Injuries

Chance of Collision Injury:

Each time a Player collides (factored by physics impact)
100% - (% Endurance Remaining)

Types of Collision Injuries:

Bloody Nose: 3 points Awareness, 3 points Control
Stunned: 3 Points Awareness, 3 points Speed, 3 points Strength

Cold Injuries

Chance of Cold Injury:

When Base Temperature falls below 25%:
Each 5 seconds the Base Temperature is below 25%:
1% chance per point below 25% of Cold Injury

Types of Cold Injuries:

Leg Cramps: 4 points Speed, 4 points Reaction Time
Frozen Hands: 4 points Control, 2 points Strength

Heat Injuries

Chance of Heat Injury:

When Base Temperature goes above 75%:
Each 5 seconds the Base Temperature is above 75%:
1% chance per point above of Heat Injury

Types of Heat Injuries:

Overheated: 3 points Awareness, 3 points Control

Remedies

Hot Chocolate + 10 Seconds: 2 points, Cold Injuries, Performance Injuries
Hot Dog + 15 Seconds: 3 points, Performance Injuries
Rest: + 5 Seconds: 1 point – All
Bon Fire/Brazier: Double all fix up Speeds, except Heat Injuries

In "Dug Out" for League Play, Bon Fire is "Brazier."
Need 1 Lump of Coal or Bundle of Switches per half of play to keep fire burning.

Bottle of Melted Glacier Ice + 10 Seconds: 2 points, Collision Injuries, Heat Injuries

Slice of Fruit Cake + 15 Seconds, 3 points, Collision Injuries

Gloves triple time of snowball/block making effects. (i.e., loose 1 point per 15 seconds instead of 1 point per 5 seconds.)

Hats and Scarves each double the amount of time it takes to loose a point of heat during activity. This is cumulative.

These numbers will likely be adjusted during development and play testing.